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ABSTRACT

Volume IV, Part B of a six-volume final report (which covers the findings of a research project on policy and technology related to rehabilitation of disabled individuals) presents a continuation of papers (Part A) giving an overview of project methodology, much of the data used in projecting consequences and policymaking impacts in project analysis, and insight into techniques used to determine exogenous factors such as the attitudes of persons influenced by research technology. Project paper 5 contains abstracts of contract papers in exogenous factors and rehabilitation technology. Presented in paper 6 is rehabilitation-oriented data describing economic, population, and other variables operating both internal to and external to rehabilitation. A seventh paper covers some of the attitudinal elements which enter into the operation of rehabilitation within society. A final paper considers the basic operation of the computer-supported handling effort of technology assessment carried out during and subsequent to the work-session conference. Appended materials include a catalog of potential consequence variables, a description and comparison of methodologies for quick fabrication of behavioral models, and statistical and simulation models for cost/benefit analysis. (SBH)

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HUMAN REHABILITATION TECHNIQUES

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Volume IV
Part B

Supplemental Report:
Project Papers

FOREWORD

This document is the fourth volume of the final report *Technology Assessment: Human Rehabilitation Techniques*, a project conducted at Texas Tech University by the Department of Industrial Engineering, the Research and Training Center in Mental Retardation, the Department of Systems, and the Technical and Professional Writing Program. The research has been conducted with the support of National Science Foundation grants ERP 75-10594 and ERP 75-10594 A01, monitored by the Directorate for Research Applications, Division of Exploratory Research and Systems Analysis.

Richard A. Dudek, Horn Professor and Chairman of the Department of Industrial Engineering has been a co-principal investigator and director of the project. Gerard J. Bensberg, Director of the Research and Training Center in Mental Retardation, and M. M. Ayoub, Professor of Industrial Engineering, have been co-principal investigators. Carol M. Sigelman and Andrew S. Martin of the Research and Training Center in Mental Retardation and Robert F. Powers of the Department of Industrial Engineering have been program managers for the project. James R. Burns and William M. Marcy of the Department of Systems have been in charge of the modeling used in the project. Technical writing has been performed by Charles W. Brewer and Cynthia E. Lyle of the Technical and Professional Writing Program. In addition, several research assistants and support personnel, as listed in the individual volumes of the study, have contributed to the project.

The project team wishes to acknowledge the efforts of individuals who have served on the Oversight Committee, Elizabeth Boggs, Kan Chen, Beatrix Cobb, Ronald Conley, Richard Herman, John Noble, Jr., Evan Vlachos, and Lester Wolcott; of Lee Phillips who served effectively as a program manager for a short time before leaving Texas Tech; of Brian Lambert who served as Work Session Conference Coordinator; of those who participated in the work-sessions chaired by Ted Hartman, David Malone, Blair Rowley, Evan Vlachos and John Wittman; and of Anne Seitz, the Secretary of the Project.

Although the National Science Foundation has supported this project, the findings, conclusions and recommendations expressed are those of the research team and do not necessarily reflect the views of NSF.

PREFACE

During the course of Technology Assessment: Human Rehabilitation Techniques, a vast amount of information was collected for analysis by project team members. This volume, supplementary to the final report, presents much of this information in the form in which it was used by persons involved in the project. Project papers provide (1) an overview of the methodology used in the project, (2) much of the data used in projecting consequences and policymaking impacts in project analysis, and (3) an insight into techniques used to determine exogenous factors such as the attitudes of persons influenced by rehabilitation technology.

Project paper 1 is an overview of the methodology and procedures planned for use in the project. This paper is of historical interest in its describing the logic underlying the various steps and stages of project development.

Project paper 2 describes the overall social context within which elements of a rehabilitation-technology interact. Scenarios describing trends in social and economic development through the year 2025 are described.

Project paper 3 is the original life-function oriented analysis of the 14 representative disabilities upon which assessment is based. This paper elaborates upon many of the

limitations in data gathering and analysis which must be thoroughly understood to permit any rigorous understanding of project results, conclusions and recommendations. Much of the substantive information from paper 3 appears in chapter 3 of volume 1, the final report of the project.

Project paper 4 is the original report on rehabilitation technologies. Most of the substantive information in this paper is presented in chapter 4 of volume 1.

Project paper 5 contains abstracts of contract papers in exogenous factors and rehabilitation technology. Included are abstracts of only those contract papers available at the time of the work session inference. Chapter 5 of volume 1 contains much of the substantive information from this project paper. The entire, unabridged contract papers are reproduced in volume 3 supplemental to the final report.

Project paper 6 presents rehabilitation-oriented data describing economic, population, and other variables oeprating both internal to and external to rehabilitation. Salient excerpts from this paper appear in chapter 5 of volume 1.

Project paper 7 describes some of the attitudinal elements which enter into the operation of rehabilitation within society. This paper presented some views of rehabilitation endorsed by some members of society as well as the responses which expression of these views elicited from work-session conference participants. Underlying paper 7 was a broader

effort by project team members to determine social attitudes axioms, and assumptions which would likely affect rehabilitation through 2025.

Project paper 8 describes the basic operation of the computer-supported handling effort carried out during and subsequent to the work-session conference. This paper reflects the design of the modeling effort developed prior to the conference; final design of and operation of the modeling effort and reported in the volume 6 supplement to the final report.

None of the project papers included in this volume reports final results, conclusions, or recommendations arrived at by the project. Each paper, however, is of historical importance insofar as is represents an intermediate stage of development of project results, conclusions, and recommendations.

VOLUME 4B

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ABSTRACTS OF PAPERS CONCERNING SPECIAL PROBLEM DIMENSIONS

Introduction

The demand which technology assessment places on team members is a formidable one. As an interdisciplinary study, a technology assessment requires that experts in particular disciplines examine consequences in other disciplines far removed from their particular areas of expertise. Oftentimes during the assessment process, information that is not widely known, collected, or published becomes crucial. To help team members meet these informational requirements, the staff of the Technology Assessment of Human Rehabilitation Techniques sought to gather an authoritative body of knowledge which included the most narrow, the most technical, the least familiar, the most relevant, and the most specific information on rehabilitation and the disabled. The staff commissioned studies by nine experts in rehabilitation-related areas. These studies covered a broad range of information, examining a spectrum extending from rehabilitation policymaking theory to practical implementation of transportation technology for the disabled.

Studies which were commissioned presented detailed information about the following topics.

Rehabilitation policymaking systems
The economics of disability and rehabilitation
Income maintenance and the disabled

Education and the disabled
Transportation and the disabled
Transportation systems being studied
The law and the disabled
Housing and the disabled
Legal aspects of housing

The first six of these studies were available for use by all work-session members during the meetings scheduled during the first full week of July 1976.

To ensure that work-session members would have maximum access to the information in these studies, abstracts of each study were prepared. In addition, information presented in tabular form within the studies was excerpted to permit convenient familiarization and reference. This report contains both abstracts and excerpts of the studies that had been completed prior to the work sessions. The last three studies are summarized within Volume 1 and are presented along with summaries of the first six.

This report is arranged in sections which correspond to individual studies. Tabular information in support of each study follows the abstract of the study.

The studies represented by these abstracts and excerpts played an important role in work-session analysis. They provided a reasonably accurate and concise picture of the logic involved in policy-related issues in rehabilitation technology. They also provided baseline figures for monetary amounts, numbers and classifications of affected persons, and other such information required for the projection of the consequences of rehabilitation-related action in the future.

These studies presented many of the verbal equations and much of the basic data which were to become the components of answers to rehabilitation problems of the present and the future. Familiarization with the contents of these abstracts and excerpts was assumed of each work-session member.

THE POLICY PROCESS AND THE INTERGOVERNMENTAL SYSTEM: MODELS AND TRENDS

THE POLICY PROCESS AND THE INTERGOVERNMENTAL SYSTEM: MODELS AND TRENDS

Efforts to determine how policies are formulated tend to identify policy formulation with (1) rational decision making, (2) affected parties, and (3) governmental and social interaction. Rational decision making stresses desired ends and logical derivation of means. Affected-party consideration, often called "muddling through," highlights the satisfaction of organizations and persons upon whom policies have impacts. Formulation of policies by consideration of governmental and social interaction underscores the various types of policies and the consequences each type may produce.

Federal legislative policies, regardless of the method used to analyze their formulation, must often be seen as a response to public demand for solution to problems or modification of government handling of problems currently covered by policy. Public-opinion data, from polls, elections, and the like, may therefore be valuable in policy analysis. Three types of data are of value: (1) measures of public trust in governmental decision making processes, (2) measures of public attitude toward formulation of specific classifications of policies, and (3) measures of the public's role in initiating or revising policies.

Because public-opinion data may be difficult to gather and may fail to reveal the intensity of public feelings, opinion data may provide inadequate policy formulation. In such cases, special-interest groups and registered lobbyists are often effective in revealing public demands to legislative bodies. Lobbyists

influence government policy through providing legislators and bureaucrats with understandable information about the public demand for policy implementation and by encouraging constituents to urge appropriate legislative action.

Policy formulation by legislative bodies is also often influenced by litigation, federal agencies, campaign contributions, and constituent communication. Also, collegial values often play an important role in infuencing a congressmen's decisions. Congressmen are expected by their colleagues to work toward goals shared by senior members of congressional committees. However, congressional decisions must be supported by appropriate national, state, and local forces. During times of widespread support, congressional parties have attempted to become more innovative only to fail with the erosion of that support.

Policy formulation is not solely the role of legislation. Agencies in the governmental bureaucracy carry tremendous power in distribution of the national budget and in interpretation of legislation. Collegial loyalty is not an important force within and among bureaucratic departments; therefore, each agency competes for both congressional and clientele support in order to gain a larger share of the budget. At times, congress intentionally passes some laws in vague and general form; at other times laws may contain unintentional ambiguities, giving bureaucratic agencies opportunity to expand or narrow the meaning of legislation through administrative guidelines. Such bureaucratic interpretation minimizes disruption to the agencies while they absorb new programs into present structural patterns. Interpretation is most often accomplished through

the distribution of drafts of guidelines to department offices for hearings throughout the country. Once approved, a draft is revised and distributed in the federal code of regulations, regardless of the resemblance it bears to original legislation.

States have also played a role in federal policy, although time lapse for state adoption of federal innovation has been reduced by organizational communication, federal assistance, and litigation, a recent study suggests that state adoption of federal innovation is regional and stems from examples set by more innovative states. These are characterized as being highly industrialized, wealthier states with a high level of party competition and high representation in urban areas. Although bureaucrats often goad poorer states into adoption of specific federal innovations, current federal programs allow state and local governments greater innovative discretion.

In order to receive funds, between 1930 and 1960, state and local governments had to follow rigid federal guidelines. However, the insistence of states upon fiscal relief from the federal government during the recession of the late 60's and 70's resulted in the General Revenue Sharing (GRS) program. Funds from this program are distributed to states and localities with few federal guidelines. At the same time, special revenue sharing programs, such the "Comprehensive Employment Training Act of 1973," provide a middle ground between "loose" GRS funds and highly restrictive federal grants. Special revenue sharing provides grants to states and localities to be spent within broad categories in compliance with equal opportunity restrictions and tight reporting requirements. This decentralization has

made GRS quite popular among political groups, while states and localities have new resources to use in accomplishing their goals. Since 1974, most public assistance programs have been federalized under the Supplemental Security Income Program, leading to greater federal support of programs such as rehabilitation of the disabled. Although accompanying federal "strings" are tighter than for revenue sharing, SSI still allows considerable local control over the extent of vocational services provided within state borders.

Although GRS legislation requires states and localities to classify their expenditures under acceptable categories such as libraries, recreation, social services, and public safety, an accountability problem occurs in a lack of precise labeling of state and local funds. For that reason, it is likely that more federal funds are being spent in supporting traditionally state-funded areas of social service than reports indicate, while less money than is actually reported is going to public safety and other more popular causes. Currently the National Clearinghouse for Revenue and the Southern Regional Council are attempting to develop more precise national estimates of GRS spending. Curtailment of the accountability problem is important to agencies supporting rehabilitation and other social interests because state and local governments lack adequate tax bases to handle social policy responsibilities and because special revenue sharing tends to lower levels of federal categorical-grant spending. Revenue sharing funds, incorporating greater accountability, (1) prevent curtailment of state and local programs, (2) allow state and local takeover of programs funded

by diminishing categorical grants, and (3) allow greater spending in health and social services. The last point suggests an increased capability of local policy makers to develop health and social services.

It is too early to predict an onset of opposition to special revenue sharing; however, at a time when public trust in the federal government is quite low, an increase in federal spending is unlikely. New political initiative is improbable. More feasible social projects include the curtailment of loopholes in open-ended programs (which will allow more spending in other social programs). National Health Insurance appears to be the only actual health-related social legislation currently feasible, and because of its redistributive effects its consequences are hard to predict.

SOME ECONOMIC CONSIDERATIONS IN DISABILITY

SOME ECONOMIC CONSIDERATIONS IN DISABILITY

The costs of disability to society are many and varied. They include lost output of goods and services, lost output from nonmarket labor (homemaking), and economic and emotional costs of dealing with disability. Disability influences the level of economic activity in the nation, and the level of economic activity influences disability.

A work disability may begin with a disease, a pathological condition, or an accident. This may, in turn, lead to impairment, defined as a physiological or anatomical loss or other abnormality. Such an abnormality could give rise to a limitation in mental or physical functioning which may or may not be classed as a disability, depending on the person's age, sex, race, education, and image in the eyes of others. Because of the significant effect of environmental factors in disability, engineering breakthroughs and education may minimize the loss associated with an impairment.

The 1966 Social Security Survey of Disabled Adults (SDA) produced estimates that 17.2 percent of all noninstitutionalized persons between the ages of 18 and 64 were disabled, according to three categories of work disability. These categories included (1) severe disability--inability to work

regularly, (2) occupational disability--ability to work regularly, though not at the same job as before the onset of disability, or inability to work full-time, (3) secondary work limitations--ability to work regularly and full-time at the same occupation but with limitations in the kind or amount of work. A followup survey which SDA conducted in 1972 (limited to noninstitutionalized persons between the ages of 20 and 64, a total of 106 million persons) revealed that the prevalence rate of disability had declined from 17.2 percent in 1966 to 14.6 percent in 1972 (15-1/2 million persons). The prevalence rate for severe disability, however, increased from 5.9 percent in 1966 to 7.3 percent in 1972, possibly indicating that persons who had considered themselves occupationally disabled in 1966 considered themselves severely disabled in 1972. Changes in the economy may have been responsible for the shift. Between 1966 and 1972, unemployment for the noninstitutionalized population increased 2.1 percent; in the less favorable job market, it had become more difficult for a disabled person to find and hold employment.

Partly because of employment problems, poverty is closely associated with disability. A 1965 study revealed that 33 percent of all disabled families were below poverty level; families with a severely disabled member had a median income of only $2,124. This report also revealed that the percentage of the disabled who support themselves through employment varies inversely with the severity of the disability. Although

earnings are usually lowest for those disabled the longest, a 1971 Social Security Administration (SSA) survey revealed that earnings for persons recently disabled were substantially lower than those for the general population. The mean earnings for the nondisabled in 1970 amounted to $5,913, whereas the mean earnings for 50 percent of the recently severely disabled were less than $2,325 that year.

Programs designed to deal with these and other problems arising from disability are of four basic types: (1) transfer programs, such as the Supplemental Security Income program, which relieve the disabled of some of the cost burden of their disabilities, (2) medical care and assistance programs, such as the Veterans' Administration Hospital program, which provide medical payments and assistance to the disabled, (3) direct service programs, such as the Federal-State Rehabilitation Program, which provide nonmedical service to the disabled, and (4) indirect service programs which devote only a portion of their resources to the disabled in the form of earmarked funds. The Federal-State Vocational Rehabilitation Program has been a particularly effective program in economic terms. Between 1965 and 1975, this program rehabilitated 2,700,000 disabled persons for placement in the labor market. Results of this program show

that in a favorable labor market, rehabilitated clients are more likely not only to find jobs but also to perceive their disabilities as less severe.

The costs of programs may be evaluated in both economic and programmic terms. Economic estimates are less tangible. For example, the transfer of money from a nondisabled taxpayer to a disabled individual is not a true economic cost to society. Programmic costs are more concrete. Between 1967 and 1973, total transfer and medical costs for disability programs increased from $38.7 billion to $80.8 billion. When price-level changes during these six years are taken into account, total expenditures for transfers and medical care for the disabled increased 54 percent in real terms. This increase indicates an expanding public role in the support of the disabled population.

Decisions made by the public in legislative programs such as those producing national health insurance, a negative income tax, national no-fault accident insurance, and national temporary disability insurance might radically change the structure of disability programs. National health insurance, for example, could eliminate programs like Medicaid and alter the whole system of delivery of medical services. A negative income tax could eliminate income-support programs and augment income maintenance programs. National no-fault accident insurance could eliminate workers' compensation plans and some public

assistance medical programs for accident victims. Temporary disability insurance could augment current programs and reduce the probability of long-term disability.

One frequently used means by which policymakers evaluate the merits of social investments is through benefit-cost analysis, a method for comparing program benefits to costs for alternative use of allocated funds. Programs with a benefit-to-cost ratio greater than one become candidates for social investment. However, the practical usefulness of benefit-cost analysis is often limited because of unquantifiable external benefits and costs, inadequate data, lack of control groups, and varied assumptions employed during analysis. Particularly in allocation of indirect costs of rehabilitation, benefit-cost analysis should be used cautiously, and it should be used as only one input in decision-making.

The number of disabled persons, their employment rates, earnings, and income, and the probabilities for their rehabilitation are all affected by economic conditions. The state of the economy, in turn, is a causal agent in determining how many people have work disabilities. A person with an impairment who considers himself nondisabled when economic conditions are good and the labor market favorable may consider himself disabled when the economy is slack and the labor market poor. In addition, because physical and mental handicaps constitute a barrier to successful labor force participation, the disabled

often withdraw from the labor market during extended periods of economic deterioration. Those who do participate in the labor force during such times may face unemployment rates twice as high as those for the nondisabled population, lower wages, and availability of only part-time employment. They may also be forced to accept jobs which do not fully utilize their skills. These conditions cause an increase in the emotional costs of disability and a decrease in the probability for successful rehabilitation.

A serious long-term effect of a slack economy is an increased demand for transfer payments from such sources as disability insurance. Acceptance of this type of support over an extended period may cause the disabled to develop a preference for transfer payments as opposed to competition in the labor force. Such idleness and underemployment of the disabled result in lost output to society. Therefore, rehabilitation programs which produce returns for society which are demonstrably greater than their costs are likely to expand in the future.

Regardless of the programs in effect at any particular time, a strong economy with low unemployment rates is one of the most important factors in reducing the impact of work disability. The disabled have a vital stake in a strong economy because availability of both opportunities for employment and funds for programs depends upon the path the economy takes.

TABLE 1

SOCIAL SECURITY SURVEY OF NONINSTITUTIONALIZED ADULTS: PREVALENCE RATES 1966 AND 1972

	1966 18-64	1972 20-64
Severely Disabled	5.9%	7.3%
Occupationally Disabled	4.9%	3.3%
Secondary Work Limitations	6.4%	4.1%
TOTAL DISABLED	17.2%	14.6%

TABLE 2

DISTRIBUTION OF WORKERS BY TYPE OF WORK

TYPE OF WORK	NONDISABLED	DISABLED	SEVERELY DISABLED
Professional and Technical Workers, Managers	28%	20%	19%
Operatives, Foremen and Craftsmen	30%	30%	23%
Sales and Clerical Workers	24%	19%	18%
Laborers, Farmers, Service Workers	18%	31%	40%

TABLE 3
OCCUPATIONS ENTERED AT THE END OF
REHABILITATION TRAINING
(1974 DATA)

OCCUPATION	NUMBER FOUND IN SAMPLING	PERCENTAGE FOUND
Service	68050	20.37%
Clerical and Sales	50421	15.09%
Homemaker	45444	13.60%
Professional, Technical, and Managerial	35096	10.50%
Structural	31432	9.41%
Bench Worker	22237	6.66%
Machine Trades	21020	6.29%
Processing	12167	3.64%
Farming	9889	2.96%
Sheltered Worker	6742	2.02%
Unpaid Family Worker	4699	1.41%
Vending Stand Operator	554	0.16%
Vending Stand Clerk	80	0.02%
Miscellaneous	26224	7.85%
TOTAL SAMPLE SIZE	334055	100.00%

TABLE 4
BENEFIT-COST RATIOS*
(MALES)

DISABILITY/AGE	WHITE under 25	WHITE 35-44	WHITE over 54	NONWHITE under 25	NONWHITE 35-44	NONWHITE over 54
0 - 7 YEARS EDUCATION						
Visual	6.0	2.3	1.1	6.7	3.0	1.6
Speech and Hearing	6.8	2.4	0.8	8.0	3.6	1.6
Orthopedic	6.1	3.5	2.7	6.7	4.1	3.2
Amputations	6.2	2.7	1.6	6.9	3.5	2.2
Mental Disability	5.2	0.5	-0.9	6.0	1.2	-0.6
Mental Retardation	7.3	2.6	0.7	8.5	4.1	1.7
Neoplasm	5.9	2.7	1.7	6.6	3.3	2.2
Blood and Respiratory	4.6	1.6	0.8	5.1	2.1	1.2
Digestive	7.4	3.4	2.0	8.4	4.5	2.9
Genito-urinary	7.3	4.1	3.1	8.1	4.9	3.8
9 - 11 YEARS EDUCATION						
Visual	7.6	4.2	2.7	8.7	5.7	3.8
Speech and Hearing	8.8	4.9	2.8	10.4	7.6	4.5
Orthopedic	7.4	4.9	4.0	8.1	5.8	4.8
Amputations	7.6	4.4	3.1	8.6	5.8	4.1
Mental Disability	7.0	2.5	0.5	8.4	4.2	1.5
Mental Retardation	9.7	6.2	3.4	11.8	11.2	6.2
Neoplasm	7.2	4.2	3.0	8.1	5.2	3.9
Blood and Respiratory	5.8	2.8	1.8	6.4	3.4	2.4
Digestive	9.3	5.8	4.1	10.7	7.8	5.7
Genito-urinary	8.8	5.9	4.7	9.8	7.2	5.8

*Benefit-cost ratios for persons with 12 years of education are included in Table 5 of the original report.

THE CHANGING ROLE OF INCOME MAINTENANCE

THE CHANGING ROLE OF INCOME MAINTENANCE

Income maintenance (IM) or income security programs are public or private programs designed to compensate an individual or his dependents for income losses resulting from involuntary unemployment, retirement, or disability. Although persons may receive some "in-kind" benefits in the form of goods and services the term "IM" refers to some form of actual cash disbursement to a person. Medicare and Medicaid entitlements are, however, often considered part of the IM system because they enable person to pay his medical bills and because they are part of the basic social security entitlement.

Traditionally, IM programs have been of two types: (1) insurance programs based on contributions by the insured and his employer, and (2) assistance programs based solely on need regardless of prior contributions. A third form of IM, the tax credit for the working poor, was instituted by the federal government in 1976. Currently, both public and private insurance and assistance programs are available. However, in the past half century assistance programs have passed almost entirely into the public domain. Private insurance programs such as disability insurance and workmen's compensation remain strong but limited in scope of coverage. This limitation and the impracticality of an individual's securing adequate private coverage for "catastrophic" disability or for lifelong disability beginning at birth indicate a future shift toward public programs of insurance as well as assistance.

Social insurance in the United States today includes such diverse programs as railroad retirement and veterans benefits, but the most important programs for the disabled are the federally administered social security and Medicare programs. The most important of the assistance programs are Supplementary Security Income (SSI) and Medicaid, jointly administered by the federal government and the states.

Of all federal social insurance programs, disability insurance is currently the least costly, amounting to $11 billion of the total $133 billion for all types of social insurance. (This $133 billion total represents three quarters of the total federal expenditure for income security and one third of the total federal expenditure for all purposes.) However, the total federal expenditure for IM for the disabled is actually much higher than $11 billion. In addition to disability insurance, the disabled also may receive benefits under old-age and survivor's insurance, Medicare and Medicaid, SSI, and Social Security dependent's benefits. Currently, 4.6 million persons receive federal disability insurance benefits, of whom, 2.6 million are disabled workers and 2 million are dependents.

The coexistence of assistance programs and insurance programs has become a major source of controversy. Current assistance programs are stigmatized and resented as a "dole," particularly by persons whose benefits derive from employee-employer contributions to insurance programs. Frequently, insurance benefits amount to little more than the assistance benefits realized by

persons who have never worked or contributed. Hence, demands have been made for a restructuring of the IM system.

The original hope of the framers of the social security system when it began in 1935 was that insurance coverage would become very nearly universal and that assistance programs would gradually be reduced to a minimum. This, however, has not been the case, and both programs have continued to grow. Even without further program changes both are expected to expand further. Disability insurance was added to the basic social security insurance program in 1957. Then, as a result of the inadequacy of coverage both of private disability-pension funds (particularly for non-work-related disability) and of the basic minimum social security benefits, SSI was enacted in 1974.

As a result of changes in IM systems so far, federal and state expenditures for IM for the disabled (not including dependents) are expected to increase from $8.6 billion in 1967 to $116 billion in constant (1967) dollars by 1990. Moreover, without further changes in the benefit structure, the public assistance portion of this amount will increase relative to the social insurance portion.

Currently, 3 million disabled persons receive social security benefits, and 1.9 million receive SSI, with 610,000 persons receiving both social security and SSI benefits. A major criticism of the IM system concerns the definition of disability currently used to determine eligibility. In order to qualify for either program, a person must be demonstrated

incapable of earning at least $230 a month regularly, because of physical or mental impairment. Mere unemployment, regional job-market peculiarities, or a physician's testimony is not considered evidence of incapacity. This definition, although functional in its simplicity and administrative efficiency, is, for several reasons, inadequate for equitable assignment of benefits. For example, a person who actually earns $230 per month is no longer entitled to SSI and Medicaid benefits and may consequently be worse off than an individual who earns much less and retains such benefits. Also, because social security and SSI benefits are assigned without regard to the extent of a person's disability, a partially disabled person capable of earning some money while retaining SSI and Medicaid benefits may be much better off than a more severely disabled person who has necessarily higher living expenses. The current benefit structure takes no account of the "disability increment," the portion of an individual's living costs (medical and other) which are necessary for overcoming or compensating for his disability.

Ideally, future IM technologies should reduce inequities primarily in two ways: (1) by ensuring that programs are of maximum benefit to the most severely disabled, and (2) by taking into account the disability increment. Achievement of these goals requires redefinition of eligibility standards to be dependent on an individual's inability to be economically self-sustaining at a "minimum decent standard of living." The

key component of this new definition is "minimum decent standard of living," which should include two components: (1) the basic maintenance component, the amount which would be required by a non-disabled person for necessities such as food, clothing, and shelter, and (2) the disability increment. The medical portion of the disability increment would include such ongoing expenses as dyalysis, insulin, nursing-home care, and the like. The non-medical portion would include extra transportaiton costs or housing costs (such as extra rent charged for a ground floor apartment).

Both the basic maintenance component and the disability increment are themselves likely to be reinterpreted in light of probable future developments: (1) separate identification of the basic maintenance component of long-term (6 months or more) inpatient care and exclusion of such costs from medical-care costs, (2) redefinition of "social services care" to include a well-defined variety of professional services designed to compensate for dependency, (3) more widespread availability of low-cost social services without a means test, and (4) inclusion of high cost services such as those of a homemaker, as part of the disability increment.

Even if no changes are made in the present IM system, substantial increases are forecast for IM expenditures for both medical and non-medical costs of the disabled. These projected increases are based on an overall increase in the number of disabled adults of working age due to increased survivorship of persons disabled from childhood and a relative increase in numbers of

persons in the disability-prone 50-65 age group. Nonetheless, changes in the IM system are likely as a result of some or all of the following forces: (1) forward thinking of individuals and study groups, (2) international trends, (3) consumerism, and (4) new service-delivery models.

Forward thinkers studying IM view proposed changes in terms of overall impact on the economy, rather than just on beneficiaries. One particularly influential group is the SSI Study Group. SSI represents a significant change in IM for the disabled, the full impact of which has not yet been felt, because of changes still being made. The positive effects of SSI include the administrative and legal separation of IM from social services, the trend towards more nearly "universal" definition of the population eligible for federally-aided social services, and the efficiency of computerized federal administration of the system. However, simplification of the system through federal administration has been achieved at the expense of individualized assessment of special needs. State-administered social assistance programs often provided for different levels of payment based on reason for eligibility, living arrangement, and geographic location, but such allowances are not presently being made and are not expected to be made in the federal program.

Rather than recommending that special allowances be incorporated in the SSI system, the SSI Study Group recommended further simplification of the system of payment. They recommended

that supplemental payments as part of SSI be made only where a single level for such payment is agreed upon within each state and that assistance payments based on special needs be returned to the states.

Some of the SSI Study Group's most important recommendations concern persons living in institutions, particularly those currently ineligible for SSI because they reside in public institutions. Observing that the present refusal or reduction of payment to an individual because he is in an institution which is or could be providing care covered by Medicaid might force him into a Medicaid facility, the SSI Study Group made the following recommendations. (1) SSI payments to persons in institutions should not be reduced unless the institution is a jail or a prison. (2) A uniform level of payment is preferable even when an individual is in a medical institution, with the payment then being applied to the cost of institutional care.

Other assessors have gone beyond the SSI Study Group in recommending changes designed to ensure greater freedom of choice for consumers and more targeted and selective service delivery. The inclusion of persons in Medicaid institutions in the fully entitled SSI category is one recommendation designed to give the individual a sense of control over the type of care he receives. Such a change, would aid in swinging the balance away from "all-in" institutionalized care towards individualized programming from each client. Sometimes

referred to as a "home-based" care model, this model centers on an individual's paying room and board wherever he lives (nursing home, apartment, house, etc.) out of his basic entitlement, with other services delivered only as needed. Such a model is attractive, provided that the disability increment is scrupulously considered.

Some types of forward thinking, however, indicate opposing trends. Economists and policymakers conceive of IM in broad, general terms, easily overlooking the disabled minority and their special needs. Hence, they tend to target programs on payments at the poverty level, overlooking the disability increment which brings many of the disabled below the poverty level.

International trends in IM influence policy decisions in the United States in several ways. Because United States social insurance and assistance programs are less progressive than those of most other industrialized nations, data from these other countries may serve as a base for policy decisions. The Social Security Administration monitors developments in social insurance and assistance in 183 countries; about one third of these developments are relevant to the United States. The international trends which may set precedents for IM for disabled persons in the United States include the following.

(1) Consolidation of disability and invalidity (non-work connected disability) benefits, to reduce the

"favored status" of persons with work-related disabilities and to more fully ensure against disability of early onset, regardless of cause.

(2) Provision for an "attendance allowance" for persons requiring full or part-time attendant care, to encourage home-based care.

(3) Consideration of partial disability in assignment of benefits, to better take into account the disbility increment.

(4) Provision for "family allowances" in the form of tax credits to families with disabled children or in the form or reimbursement to families for the excess cost of home care of disabled children and adults, to encourage deinstitutionalization.

Another significant international trend is in the area of national health insurance. Such a program, if passed, might prove disadvantageous to the disabled, at least in the short run. Current debate centers on the relative merits of "catastrophic" versus "widespread" coverage. Widespread coverage, offering some coverage of routine health-care problems, is politically more attractive because it "spreads the benefits around," but catastrophic coverage for extraordinary health care problems would be more advantageous for the disabled. Opposition to even a token form of catastrophic coverage was evident in the recent defeat of President Ford's proposal to increase the initial Medicare deduction.

At present only about 8 percent of the medical costs of the elderly and the disabled are covered by Medicare. If national health insurance is enacted, a residual means-tested program such as Medicaid will probably be necessary, but it will have to be made more uniform than at present. Currently variations in state Medicaid plans leave many indigent persons uncovered.

Consumerism is a growing force in the United States which may have significant influence over future IM policy decisions regarding the disabled. Self-advocacy by the disabled is increasing, as evidenced by the favored status acquired by the blind and through the formation of advocate groups such as the Disabled in Action and the American Coalition of Citizens with Disabilities. These groups stress the desire of the disabled for rights, not charity, and they reflect increasing distrust of agencies and professionals as "surrogate spokesmen," insisting on their right to speak for themselves. Among the specific concessions sought by consumer-advocates among the disabled are the right to work, made possible by employer accommodation of the needs of handicapped workers; further recognition of the disability increment in housing and transportation; and a minimum wage for the handicapped, even when such a guarantee results in a loss of productivity for the employer and a loss in other IM benefits to the disabled employee. A technology assessment commissioned by the Office of Civil Rights estimated the cost to employers for accommodating the needs of disabled workers at $50 million,

contrasting with benefits to the economy of $500 million. A minimum wage for disabled workers seems unlikely even though the AFL-CIO has encouraged unionization of sheltered workshop employees.

The disabled will undoubtedly continue to press for accommodation of their needs in housing and transportation. To the extent that such accommodations become more nearly universal, the disability increment will be reduced. However, the vocal disabled will strive for offset of the persisting disability increment by opposing "decategorization" of IM and by seeking "standard" increments in areas such as the "constant attendance" allowance made in other countries. In addition, they will seek non-means-tested entitlements to health, social, and training services peculiar to the disabled. The positive effect of the preference of the disabled for compensation based on the disability increment over "welfare" would be a hastening of the shift from public assistance to social insurance as the preferred form of IM for the disabled. Possible negative effects include disadvantages for disabled groups less capable of self-advocacy, such as the National Association of Retarded Citizens. Both their incapacity and the prejudices of the physically handicapped towards the mentally handicapped work against the less vocal disabled.

New service delivery models are emerging which may have a number of significant effects on IM programs. The current trend in delivery of services (rehabilitation, education,

etc.) is towards non-categorical organization of state services through "umbrella" agencies, along with revenue sharing and an end to federal "earmarking" of funds. This trend may be detrimental to the disabled who, as a special minority, benefit from federal standard setting. It might also mean a loss of visibility of, accountability for, and quantity or quality of services to the disabled. On the other hand, if there is strong advocacy for the disabled at the state level, an increase in delivered services may result because of the stronger claim of the disabled on generic services. For example, the developmentally disabled now receive much more in "channeled" funds than might have been appropriated for them on a "categorical" basis.

Other trends in service delivery systems include a tendency toward individualized prescriptive programming and away from agencies and insitutions with "blanket" administrative responsibility for the delivery of all services to a particular group (such as state residential schools for the deaf and retarded or state agencies for the blind). This new approach is based on the assumption that each major service system should accommodate the full range of need for its services. For example, the educational system should serve all who require education, including even the most severely handicapped. The success of this approach is dependent upon the emergence of new types of professionals and paraprofessionals who assist the disabled person in securing services from various

sources and who provide follow-up, particularly for persons whose social competency is impaired.

Changes in the service-delivery system in the direction of prescriptive programming with multiple providers serving the same client depend upon the following changes in the IM system: (1) an increase in the basic maintenance allowance to a level adequate for meeting basic needs, (2) incorporation of a method for accounting for the disability increment, (3) redefinition of medical coverage to include comprehensive medical rehabilitation, home health care, and maintenance of equipment but to exclude long-term board and lodging, and (4) universal implementation of low-cost social services such as transportation for the disabled. To the extent that such changes are made, the following impacts may be expected: (1) removal from IM of services available universally or on a generous means-tested basis (transportation, special education, rehabilitation), and (2) recognition of lack of availability of services included in the basic entitlement as a loss of benefit.

Whether or not changes are made in the IM system, the conflict between self-determination and social intervention is certain to continue. Some of the disabled will attempt to protect their rights to basic entitlements, and others will protest such entitlements as "dehumanizing," demanding further programs and services to provide total integration of the disabled into the mainstream of society. If this second

group prevails, the future for some of the disabled will not be bright. The disability increments which may be achieved in the coming years might, by the 21st century, be discontinued, and the most severely disabled would suffer.

TABLE 1
PERCENTAGE (BY SEX) OF TOTAL SEVERELY DISABLED POPULATION
1966 AND 1972

YEAR	TOTAL	MEN	WOMEN
1966	5.9	4.7	7.0
1972	7.1	5.7	8.3

Severely disabled--unable to work or able to work only intermittently

TABLE 2
DISABLED BENEFICIARIES UNDER SOCIAL SECURITY AND SSI
1975 AND 1976
NUMBER IN CURRENT PAYMENT STATUS (IN MILLIONS)

	FEBRUARY 1976	FEBRUARY 1975	PERCENTAGE INCREASE
Disabled workers	2.529	2.277	11%
Disabled adult children	.350	.330	6%
SSI (Disabled)	1.958	1.691	15%

The basic payment level as of January 1976 was $157 a month, as compared to a poverty level of $215 a month. Many states supplement above the federal basic level, however.

TABLE 3

FEDERAL INCOME SECURITY BENEFITS (IN MILLIONS OF DOLLARS)

	1975 ACTUAL	1976 ESTIMATE	TQ ESTIMATE	1977 ESTIMATE
Federal outlays for cash benefits:				
Social security (OADSI)	62 469	71 386	19 569	81 340
Federal employee benefits	13 986	16 458	4 478	18 922
Veterans benefits	8 140	8 782	2 268	8 679
Public assistance	8 672	9 745	2 713	10 870
Unemployment insurance	12 221	17 902	3 609	15 428
Railroad retirement	3 034	3 422	893	3 624
Other programs	1 063	1 164	285	1 113
Proposed legislation included above	-------	-------	(-33)	(-906)
Subtotal, cash benefit outlays	109 585	128 859	33 815	140 026
Federal outlays for in-kind benefits				
Food and nutrition	6 468	7 968	1 658	6 334
Health care	21 513	25 341	6 722	28 162
Housing	2 072	2 295	559	2 551
Proposed legislation included above	-------	(-447)	(-701)	(-4 449)
Subtotal, in-kind benefits outlays	30 053	35 604	8 939	37 047
Total benefits	139 638	164 463	42 755	177 073

TABLE 4

INCOME SECURITY BENEFITS BY TARGET GROUPS (IN MILLIONS OF DOLLARS)

	1975 ACTUAL	1976 ESTIMATE	1977 ESTIMATE	CHANGE 1975-77	PERCENT CHANGE 1975-77
Annuitants	39 743	45 921	52 581	12 838	33.3
Other aged	41 419	46 797	51 791	10 371	25.0
Disabled	21 297	25 045	28 478	7 181	33.7
Mothers and children	7 358	8 289	9 113	1 755	23.9
Temporarily unemployed	12 744	18 375	15 868	3 094	24.2
Other transitional low income	9 720	11 559	11 253	1 533	15.8
Other	7 328	8 476	7 989	661	9.0
TOTAL	139 638	164 463	117 073	37 435	26.8

TABLE 5

BENEFIT OUTLAYS FOR THE DISABLED: BENEFITS, BENEFICIARIES, AND AVERAGE PAYMENT

	BENEFIT OUTLAYS (in millions of dollars)			NUMBER OF BENEFICIARIES (thousands)			AVERAGE MONTHLY PAYMENTS (in dollars)		
	1975 actual	1976 estimate	1977 estimate	1975 actual	1976 estimate	1977 estimate	1975 actual	1976 estimate	1977 estimate
Civilian covered employment:									
Disability insurance	7 630	9 141	10 768	3 912	4 573	4 573	163	175	196
Federal civilian employees	1 359	1 658	1 965	271	290	306	418	477	536
Railroad employees	206	230	251	45	46	47	381	417	445
Coal miners	612	621	557	353	343	321	144	151	145
Medicare	1 368	1 853	2 213	2 025	2 255	2 565	56	68	72
Uniformed services:									
Service-connected disability	4 736	5 198	5 353	3 167	3 177	3 178	125	136	140
Other: Income-tested	503	536	505	513	510	488	82	88	86
Public assistance to the disabled:									
Supplemental security income	2 264	2 707	3 313	1 622	1 950	2 317	116	116	119
AFDC(disabled male head of family)	574	650	700	1 380	1 440	1 410	35	38	41
Medicaid	1 740	2 081	2 363	2 497	2 534	2 572	58	27	77
In-kind benefits to needy disabled: Food	305	370	323	1 062	1 141	938	24	27	29
Total	21 297	25 045	28 311	-----	-----	-----	----	----	----

TABLE 6

HOSPITAL INSURANCE BENEFICIARIES AND BENEFIT PAYMENTS BY TYPE OF COVERAGE
1975 THROUGH 1977 (IN MILLIONS)

	1975 Actual	1976 Estimate	TQ Estimate	1977 estimate
Beneficiaries:				
Persons with hospital insurance protection (average):				
Aged	21.6	22.0	22.2	22.4
Disabled	2.1	2.3	2.4	2.5
Beneficiaries receiving reimbursed services:				
Aged	4.9	5.0	1.2	5.1
Disabled	.6	.7	.2	.8
Benefit payments:				
For inpatient hospital services:				
Aged	$ 9 033	$10 482	$2 839	$12 829
Disabled	921	1 213	351	1 628
For skilled nursing facility services:				
Aged	259	292	79	356
Disabled	8	8	3	12
For home health services:				
Aged	123	177	53	248
Disabled	9	12	4	17
Total benefit payments:				
Aged	9 415	10 951	2 971	13 433
Disabled	938	1 233	358	1 657
Total	10 353	12 184	3 329	15 090

TABLE 7

SUPPLEMENTARY MEDICAL INSURANCE BENEFICIARIES AND BENEFIT PAYMENTS BY TYPE OF COVERAGE
1975 THROUGH 1977 (IN MILLIONS)

	1975 Actual	1976 Estimate	TQ Estimate	1977 Estimate
Beneficiaries:				
Persons enrolled (average):				
Aged	21.5	21.9	22.1	22.4
Disabled	1.8	2.0	2.1	2.2
Beneficiaries receiving reimbursed services:				
Aged	11.2	11.7	3.0	12.5
Disabled	1.4	1.5	0.4	1.7
Benefit payments:				
For physician's services:				
Aged	$2 805	$3 289	$961	$3 976
Disabled	221	337	106	444
For home health services:				
Aged	46	67	22	93
Disabled	5	8	3	13
For outpatient services:				
Aged	402	583	193	822
Disabled	198	299	101	434
For other medical and health services:				
Aged	82	95	27	112
Disabled	6	9	3	11
Total benefit payments:				
Aged	3 335	4 034	1 203	5 003
Disabled	430	653	213	902
Total	3 765	4 687	1 416	5 905

TABLE 8
PERSONS RECEIVING MEDICAL ASSISTANCE

	1975	1976	1977
Aged 65 and over	4 170 000	4 232 550	4 296 038
Adults in AFDC families	5 100 000	5 304 000	5 410 080
Blind	127 000	128 905	130 838
Children under 21	10 700 000	11 128 000	11 350 500
Permanently and totally disabled	2 370 000	2 405 550	2 441 633
Total all recipients	22 467 000	23 199 005	23 629 149

TABLE 9
SOCIAL SERVICES PROGRAM COST UNDER TITLE XX OF THE SOCIAL SECURITY ACT
(IN THOUSANDS OF DOLLARS)

	1975	1976	TQ	1977
Total costs	2 622 364	2 950 931	773 000	3 200 000
Federal share:				
Day care	486 718	555 492	143 900	595 200
Foster care	264 947	304 843	78 300	324 000
Services to mentally retarded	249 247	295 811	73 600	304 800
Drug abuse/alcoholism services	92 241	106 130	27 200	112 800
Family planning	43 177	49 678	12 800	52 800
All other (including homemaker, protective, and health related services)	826 243	946 142	244 200	1 010 400
Total Federal share	1 962 573	2 258 096	580 000	2 400 000

TABLE 10

NUMBER OF RECIPIENT MONTHS OF SERVICE UNDER TITLE XX OF THE SOCIAL SECURITY ACT
(IN THOUSANDS)

	1975	1976	1977
Total estimated months of service	10 607	11 172	11 406
Selected services (nonadditive; recipients may receive more than one service):			
Day care	882	925	943
Foster care	791	838	846
Services to mentally retarded	508	551	560
Drug abuse/alcoholism services	168	176	180
Family planning	2 398	2 547	2 640
All other (including homemaker, protective, and health related services)	5 860	6 135	6 237

THE FUTURE OF PUBLIC EDUCATION FOR THE HANDICAPPED

THE FUTURE OF PUBLIC EDUCATION FOR THE HANDICAPPED

The field of special education has expanded and developed significantly during the past 25 years. This growth is evident in increased enrollment, increased funding, expanded judicial and legislative support, new service-delivery programs, and expanded personnel-training programs.

Enrollment in special-education programs has increased 700 percent during the past 25 years. It will doubtless increase even more as a result of judicial decisions and federal legislation such as the Education of All Handicapped Children Act of 1975. This act guarantees free public education for all handicapped children. Overall, federal funding in support of public education for the handicapped has increased 300 percent since 1970. However, an additional 400-percent increase will be required by 1980 as a result of a projected 2.4 million increase in the number of children requiring special education. Much of this increase will be needed for new programs which, though costly, will hopefully be more cost-effective than current programs. One promising new program is directed towards reassessment of handicapped children previously considered uneducable. Others such as the Early Period Screening, Diagnosis, and Treatment Program and Head Start are directed towards early intervention and treatment. Vocational training, too, is receiving closer attention as a result of a Bureau of Education for the Handicapped report indicating that only 25 percent of handicapped high school graduates secure adequate employment.

Continued support and funding for special education is, nonetheless, problematic. On the one hand, current political and economic pressures may lead to a decrease in support and funding and, consequently, to a decrease in quantity and quality of services. On the other hand, these same pressures may lead to increased cost-effectiveness in special-education programs and may not necessarily lead to a decline in quantity or quality. Regardless, the future of special education will be determined by attitudes of the general population as reflected in government policy.

Recent federal policy on special education reflects a trend towards increased funding with fewer restrictions. Such a policy, however, may pose a threat to special education programs. With loss of control over state and local expenditures, the federal government may no longer be able to ensure equalization of services among various regions of the country. Whether or not current and future governmental policies result in uniform, high-quality services in special education depends primarily upon consumer influence.

Increased consumer involvement in special-education planning and service-delivery is evident on a number of fronts. The Developmental Disabilities Act of 1975 requires that handicapped persons and parents of handicapped persons be included on state advisory councils. The Education of All Handicapped Children Act requires that the handicapped children and their parents be involved in all decisions regarding evaluations, placement, and follow-up of the child. In addition, parents of handicapped

children are working more actively with professionals and para-professionals in securing education and services for themselves and their children.

Of direct and immediate concern to all persons involved in special education is the availability of resources for support of current and future programs. Statistical analyses show a 100-percent increase by 1980 in the number of handicapped children to be served by special-education programs. The projected increase is due to recent court decisions and legislation making public education for all handicapped children mandatory, and to increased delivery of services to certain groups, including handicapped secondary school-age students and the trainable mentally retarded and emotionally disturbed. Somewhat offsetting these increases are three factors: (1) the theoretically greater availability of space and resources for the handicapped due to a projected drop in the number of school-age children over the next 10 years, (2) the availability of a sufficient number of teachers at least partially trained in special education, and (3) the trend towards less-costly programs such as placement of the less severly handicapped into regular classrooms. Nonetheless, the increase in the number of persons to be served, the need for more specialized training for teachers, inflation, and an increase in high-cost services such as training for the severely mentally retarded and emotionally disturbed will call for at least double the current expenditures by 1980.

The greatest need for additional funding is in the area of in-service training for the 60 percent of teachers currently employed

in special education who do not meet special-education certification standards, and for continuing education for the 40 percent who do.

State and local governments have long provided most of the funding for special education, but they are approaching a maximum tax base for education now. Therefore, future additional funding probably will have to come from the federal government. Since 1960, funding for the Bureau of Education for the handicapped has increased 366 percent, and federal contributions to state and local government special-education programs are expected to increase 400 percent over the next decade as a result of the Education for All Handicapped Children Act. Whether such a federal commitment will continue remains to be seen.

Along with increased funding, judicial and legislative actions have played a vital role in the expansion of special-education services. The Due Process Clauses of the 5th and 14th amendments to the U. S. Constitution and the Equal Protection Clause of the 14th amendment have been the basis of numerous precedent-setting decisions concerning education of the handicapped. In general, these decisions have called for programs to be based on individualized assessments of handicapped persons, and for reallocation of funds to ensure court decisions have established the following and for reallocation of funds to ensure compliance with the following principles. (1) All handicapped persons have a right to free public education, regardless of the severity of their disabilities. (2) All handicapped persons can, at any point in their lives, benefit from an education program. (3) To ensure that handicapped

persons will have a chance for cure or improvement of their conditions, they have a right to individualized treatment in humane environments and minimally restrictive programs. (4) Due process procedures must be followed prior to "labeling" and placement of handicapped persons. Moreover, these due process rulings are retroactive, providing for re-evaluation of individuals already labeled and placed.

Legislative response, on both the federal and state level, to recent court decisions has resulted in strengthening and reaffirming the rights of handicapped persons. At the federal level, the resources of the Bureau of Education for the Handicapped have been greatly increased to provide for research, for development of new programs, and for training of personnel. Also, several highly significant pieces of legislation have been enacted. The Education of All Handicapped Children Act is considered the most important of these. It calls for the federal government to bear a gradually increasing share of the per-student cost of special education, reaching and stablizing at the 40-percent level in 1982. It provides for a shift in focus of special-education research to the severely disabled and previously unserved populations, and is specifies that services are to be made available for children from ages 3 to 21. It also contains specific directives concerning pre-school incentives, individualized programs, personnel development, and formation of state planning and advisory boards.

Another highly significant law, the Education of the Handicapped Act, also reflects the shift in focus towards the currently unserved handicapped population; this act calls for increased early education and consumer involvement as well as for the development of state plans which gurantee delivery of services to all handicapped children. Other federal legislation ensures that priority in vocational rehabilitation programs is given to the most severely disabled and protects the rights of the handicapped in areas such as maternal and child health care, transportation, and home-buying.

State legislatures have expanded education codes to establish guidelines for assessment and placement of the educable mentally retarded (EMR), and 21 states have passed laws calling for compulsory special education. In addition, a number of states have enacted statues covering architectural barriers, bilingual education, child advocacy proceedings, program accountability, and many other issues in special education. In the development of such legislation, a particularly valuable sourcebook has been State Law and Education of Handicapped Children, Issues and Recommendations (1971) by Weintraub, Abeson and Braddock. This text includes both a model law and the following specific recommendations for legislation: (1) required public education for all handicapped children, (2) re-examination of systems of classifying the handicapped, (3) provision for educational services to handicapped youths from birth to 21 years of age, (4) annual re-evaluation of each child, (5) due process guarantees for children and their families when adjustments to

to "normal" activities are made, (6) special education in public schools, (7) state absorption of educational costs beyond funding equal to expenditures for a normal child, (8) assured delivery of full educational services from classroom to residential instruction, (9) development and support of recruitment programs for trained personnel, and (10) school construction in compliance with state regulations regarding architectural barriers.

In the course of the development of federal and state special-education programs, the topic of most serious debate has been the relative effectiveness of special classes for the educable mentally retarded (EMR) and integration of these children into regular classrooms. Until the mid-sixties, 90 percent of EMR children in school were placed in special classes. Recently, however, several authorities have argued for inclusion of EMR children in regular classrooms. Such placement, they contend, expands the social development of the retarded children, enhances the attitudes of the non-retarded children, and minimizes the potential damage resulting from mis-placement of borderline, minority, and disadvantaged children. Proponents of special classes, on the other hand, argue that the unique physical and educational needs of the severely retarded child cannot realistically be met in a large regular classroom. Moreover, they note that attitudes and values of teachers are crucial in determining proper placement for a retarded child, with the implication that many regular classroom teachers are not attitudinally equipped to cope with EMR children.

One proposed solution is one which incorporates both individualized instruction and normal settings (the resource classroom approach). Although little empirical research has been done on this issue, preliminary findings in one study show more positive results from this approach than from either a wholly segregated or a wholly integrated approach. Resolution of the issue, however, demands comprehensive research into the needs of the child and the relationship of these needs to the physical and social environments and to values and attitudes of parents and teachers.

The current trend in special education is toward provision of educational conditions as nearly normal as possible. Many schools now place handicapped children in regular classrooms, for instruction in specific skills and abilities in the "resource room." Other schools use the "consulting teacher" approach. In these schools, the child is placed in a regular classroom where he follows an individualized program of instruction developed for him by a consulting teacher. In addition, two federally-funded model programs which emphasize individualized instruction are now underway. The Child Development Consultant (CDC) program provides training at the master's degree level for specialists who offer consultation with and in-service training for regular school personnel. Programs based on such consultation have resulted in supportive, individualized instruction for all children in the schools. The Handicapped Children's Early Assistance Program offers individualized programs for children

from ages 0 through 8, as well as training for parents. These programs are underway at over 200 model "First Chance" centers throughout the country.

Despite the trend towards "mainstreaming" handicapped children into regular classrooms, segregated self-contained classrooms still exist for the severely handicapped who function best in such environments. In these situations, children are grouped either according to type of disability or according to age.

Although there is some controversy over whether the need for more educators of the handicapped should be met by loosening requirements or by training more specialists, there is no dispute over the absolute need for more teachers for the handicapped. Federal and state funding of teacher-training programs has provided the greatest impetus toward filling this need. By 1970, 400 colleges and universities offered training in special education (in contrast to the 70 which did 20 years ago), and programs at 300 of these schools were federally funded. Nonetheless, a major shortage of special-education personnel, both professional and paraprofessional, still exist. Currently, the area of greatest need is in early education of handicapped children, followed by education of minority and bilingual handicapped children and gifted children. Exact estimates of needed manpower are not, however, currently available because of disagreement about needs of handicapped children

and the multiplicity of special education programs. Still, the overall need for special educators is indisputable and must be met through federal, state, and local funding of training programs.

TABLE 1
SUMMARY OF ENROLLMENT IN SCHOOLS, BY INSTITUTIONAL LEVEL AND CONTROL: UNITED STATES, FALL 1963 TO 1983

(in thousands)

YEAR (FALL)	TOTAL ENROLLMENT (EXCLUDING INDEPENDENT NURSERY SCHOOLS AND KINDERGARTENS)		
	Total	Public	Nonpublic
1963	51 253	43 253	8 000
1964	52 996	44 884	8 112
1965	54 394	46 143	8 251
1966	55 629	47 388	8 241
1967	56 803	48 707	8 096
1968	58 257	50 375	7 882
1969	59 124	51 516	7 608
1970	59 890	52 337	7 553
1971	60 229	52 885	7 344
1972	59 859	52 814	7 045
1973	59 812	52 829	6 983
PROJECTED			
1974	59 409	52 525	6 884
1975	59 103	52 307	6 796
1976	58 829	52 110	6 719
1977	58 371	51 726	6 645
1978	57 557	50 992	6 565
1979	56 779	50 306	6 473
1980	56 356	49 877	6 479
1981	55 991	49 514	6 477
1982	55 738	49 280	6 458
1983	55 777	49 360	6 417

TABLE 2
PROJECTED INCIDENCE STATISTICS 1970 - 1980

INCIDENCE RATES (School age children, 5-19)		NUMBER OF CHILDREN IN PUBLIC SCHOOL 1970 (millions)	NUMBER OF CHILDREN IN PUBLIC SCHOOL 1980 (millions)
Speech Impaired	3.5%		1.7
Emotionally Disturbed	2.0%		.98
Mentally Retarded	2.3%		1.1
Learning Disabled	1.0%		.49
Hard-of-Hearing	0.5%		.24
Deaf	0.7%		.34
Crippled or Other	0.5%		.24
Handicapped Impaired			
Physically Impaired	0.1%		.04
Multi-Handicapped	.06%		.03
TOTAL HANDICAPPED	10.035%	2.9*	5.2
TOTAL CHILDREN	100.0%		

*Approximate number enrolled in 1970

TABLE 3
COMPARISON OF STATE, LOCAL, AND FEDERAL EXPENDITURES
FOR SPECIAL EDUCATION IN 1970*

(millions of dollars)

CATEGORY	STATE AND LOCAL	FEDERAL	PERCENTAGE BY FEDERAL
Mentally Retarded (t)	260	45.5	18
Mentally Retarded (e)	840	75.9	9
Hard of Hearing	55	13.6	25
Deaf	91	42.5	47
Speech Impaired	251	21.8	9
Visually Impaired	66	19.2	29
Emotionally Disturbed	258	35.0	14
Crippled	210	10.0	5
Learning Disabilities	250	32.1	13
Other Health Impaired	84	19.2	23

* As is seen from this table, Federal expenditures are currently only a fraction (except in the Deaf category due to Federally supported schools) of the total amounts expended.

TABLE 4
TOTAL EXPENDITURES (STATE, LOCAL, AND FEDERAL) PER CHILD
AND PERCENTAGE SERVED* FISCAL YEAR 1971-72

CATEGORY	TOTAL FUNDS-LOCAL STATE, FEDERAL (in millions)	EXPENDITURE PER CHILD	TOTAL NUMBER SERVED	PERCENT OF TOTAL SERVED
Mentally Retarded (t)	$ 305.5	$ 2 064	148 000	4.9%
Mentally Retarded (e)	915.9	1 217	752 000	24.7%
Hard of Hearing	68.6	1 247	55 000	1.8%
Deaf	133.5	4 767	28 000	0.9%
Speech Impaired	272.8	197	1 383 000	45.4%
Visually Impaired	85.2	3 043	28 000	0.9%
Emotionally Disturbed	293.0	1 472	199 000	6.5%
Crippled	220.0	1 718	128 000	4.2%
Learning Disabled	282.1	1 227	230 000	7.5%
Other Health Impaired	103.2	1 086	95 000	3.1%
TOTALS**	$2 678.9	$ 879 per child (average)	3 046 000	100.0%

* Based on data collected from all 50 states

** The combined total of state, local, and federal funds in 1971-72 for each area of handicap represented was 2,678.9 million dollars. During this time, 3,046,000 handicapped children were served. Expenditures per child ranged from a high of $4,767 to a low of $197. The expenditures per child average $879.

TABLE 5

DISPERSION OF STATE AND LOCAL FUNDS PER DAILY AVERAGE ATTENDANCE

ALL STATES COMBINED 1971

CATEGORY	AVERAGE PER ADA	STANDARD DEVIATION	COEFFICIENT OF VARIATION
Mentally Retarded (t)	$ 4.61	$ 3.30	71.645%
Mentally Retarded (e)	14.61	7.78	53.236%
Hard of Hearing	1.19	1.55	131.030%
Deaf	1.69	1.75	103.714%
Speech Impaired	5.98	7.97	133.367%
Visually Impaired	1.20	1.07	88.599%
Emotionally Disturbed	4.51	5.97	132.356%
Crippled	2.30	3.38	146.610%
Learning Disabled	4.87	6.20	127.303%
Other	1.58	2.35	147.822%
TOTALS*	$43.83	$24.43	55.744%

* Expenditures vary dramatically from state to state in amounts spent per child, per average daily attendance (ADA). In Table 5, the first column represents the average (mean) amount allotted per child per state (based on all data from all 50 states). The second column, Standard Deviation, is a representation of variation in actual dollars, while the coefficient of variation is a variation of proportion, in relation to the actual dollars in percentages. The large coefficient of variations indicate one of two conditions: (1) either a large variation in the percentages of children served or (2) a large variation in the expenditures per child.

TABLE 6

FEDERAL FUNDING OF BUREAU OF EDUCATION FOR THE HANDICAPPED - FY 1960-1975

(IN MILLIONS OF DOLLARS)

	1960	1962	1964	1966	1968	1970	1971	1972	1973	1974	1975
Education improvements for the Handicapped	.3	1.2	5.0	15.4	50.0	79.1	85.1	93.1	105.4	96.1	120.8
Education for the Handicapped	-	-	-	-	7.9	31.1	29.3	32.7	39.6	35.5	16.3
Teacher Education and Recruitment	.3	.9	2.5	10.4	24.2	31.2	27.4	25.2	28.2	24.4	46.3
Research & Innovation (includes deaf-blind & resource centers)	-	-	1.0	3.2	8.3	12.5	20.7	16.9	21.6	17.0	32.1
Captioned Films & Media Service	.07	.2	1.5	1.7	.6	4.3	5.0	11.7	9.3	9.9	12.5
Early Childhood Education	-	-	-	-	-	-	2.8	6.7	6.7	9.4	12.5
Totals	.67	2.3	10.0	30.7	91.0	158.2	170.3	186.3	210.8	192.3	241.5

TABLE 7
PROJECTED FEDERAL EXPENDITURES FOR EDUCATION OF HANDICAPPED CHILDREN

YEAR	PERCENT OF TOTAL EXPENDITURE (LOCAL, STATE, FEDERAL)	FEDERAL EXPENDITURES (millions)
1971	3 %	90.8
1975	4 %	241.5 +
1978*	5 %	587.0 +
1980	20 %	1.2 billion +
1982	40 %	3.6 billion +

*Education for All Handicapped Children Act takes effect--authorized funding levels

TABLE 8
LEVEL OF STATE (ONLY) EXPENDITURES IN MILLIONS OF DOLLARS

STATE	1971-72	1972-73	1973-74	PERCENT OF INCREASE SINCE 1971
Alabama	15.0	19.0	25.0	66.6
California	171.8	183.0	188.1	9.4
Florida	42.8	57.2	85.5	99.7
Massachusetts	18.8	24.2	31.9	69.7
New Jersey	35.4	44.9	56.5	59.6
New Mexico	4.5	6.0	8.0	77.8
Pennsylvania	73.6	139.6	152.8	107.6
South Carolina	10.0	12.5	16.5	65.0
Mean	48.6	63.1	72.8	66.0

TABLE 9
PER PUPIL COSTS

CATEGORY OF EXCEPTIONALITY	REGULAR EDUCATION ANNUAL PER PUPIL EXPENDITURES	SPED ADPE
EMR	$1,316	$ 661
TMR	1,627	972
Audible Handicapped	2,103	1,448
Visual Handicapped	2,197	1,542
Physically Handicapped	2,113	1,458
Speech Handicapped	779	144
ED	1,683	1,028
Multi-Handicapped	1,941	1,286
Gifted	809	154

TABLE 10
SERVICE DELIVERY COSTS
ELEMENTARY SCHOOL
(ESTIMATED PROJECTIONS)

MODEL	NUMBER SERVED	DIRECT COSTS	INDIRECT COSTS	TOTAL COSTS	TRAINING COSTS	TRAINING COSTS PER YEAR	PER CHILD TRAINING COSTS	TOTAL COSTS (TRAINING AND SERVICE)
Institutional	5	10,000	---	10,000	10,000+	1,000	200	10,000+
Special Class (self contained)	8	2,300	400	2,700	18,000	1,800	220	2,920
Resource Class	20	750	800	1,550	22,000	2,200	110	1,660
Consulting Teaching Specialist	20	500	800	1,300	26,000	2,600	130	1,430
Child Development Consultant	40	250	800	1,050	26,000	2,600	65	1,115
Early Education	8	1,000	800	1,800	22,000	2,200	220	2,200
Regular Education	25	800	---	800	26,000	2,000	40	840

TABLE 11
PROFESSIONAL STAFF FOR THE HANDICAPPED IN LOCAL PUBLIC ELEMENTARY AND SECONDARY SCHOOLS
UNITED STATES, SPRING, 1971

TYPE OF HANDICAP	TOTAL	TEACHERS OF SEPARATE (SPECIAL) CLASSES	REGULAR TEACHERS WHO PROVIDED SPECIAL INSTRUCTION IN REGULAR CLASSES	SPECIALIZED PROFESSIONAL PERSONNEL WHO PROVIDED INDIVIDUALIZED INSTRUCTION
TOTAL	500,000	136,000	300,000	80,000
Speech Impaired	96,700	35,100	31,400	30,200
Learning Disabled	123,000	27,900	81,400	13,700
Mentally Retarded	102,500	54,300	41,900	6,200
Emotionally Disturbed	74,100	11,300	48,800	14,000
Hard-of-Hearing	21,200	2,000	12,500	6,700
Deaf	6,200	2,300	3,000	800
Crippled	13,400	1,800	8,200	3,400
Partially Sighted	20,200	800	16,100	3,200
Blind	6,900	500	4,600	1,800

TABLE 12
MANPOWER IN SPECIAL EDUCATION
(ESTIMATE, 1976)

Number of teachers needed	500,000
Number of teachers trained and employed	250,000
Number of teachers certified	150,000
Yearly attrition of teachers	20,000
Number trained per year	32,000
Number needed per year in future	35,000

TRANSPORTATION PROBLEMS OF PERSONS WITH DISABILITIES: THE FEDERAL RESPONSE

TRANSPORTATION PROBLEMS OF PERSONS WITH DISABILITIES: THE FEDERAL RESPONSE

The number of persons with disabilities which prevent their use of public transportation is, according to the Department of Transportation (DOT), indeterminate. The Department of Health, Education, and Welfare (DHEW) estimates that 13.4 million disabled persons have transportation difficulties, and the Urban Mass Transportation Administration (UMTA) estimates that five million disabled persons are totally unable to use public transportation. An estimate of the number affected in 1985 shows these figures to be increasing.

Physically and mentally disabled persons travel only half as much as the nondisabled because of physical and operational barriers. Lack of transportation primarily affects the disabled in the area of employment. Improved transportation systems improve employment, social opportunities, and personal stability.

The role of government in improving transportation by statute has been ineffective. Statutes are generally aimed at specific transportation barriers, but related barriers remain to impede transportation. Five federal laws contain wording which specifically applies to accessible transportation; among these five, only two--the "Amtrak Improvement Act of

1973" and the "Department of Transportation and Related Agencies Appropriations Act of 1975"--specifically state that transit systems must be accessible to the disabled. Interpretation of such statutes often provides loopholes which inhibit enforcement. The UMTA, an organization within DOT charged with codifying requirements covering transit systems, has not been very effective. The agency has proposed regulations which require the use of special equipment in vehicles operated by agencies receiving UMTA funds. These regulations, however, present three problems. (1) The UMTA fails to commit resources for the development of accessible transportation, (2) the agency does not encourage the use of new technology in the development of more accessible systems, and (3) the agency has not clearly identified the needs of the disabled. Because of these and other problems, the UMTA has not issued final regulations.

Airline transportation accessibility presents a particularly difficult problem because of safety requirements affecting both disabled and nondisabled passengers. The main problem occurs, according to the Federal Aviation Administration (FAA), in the disruption by the disabled of emergency-evacuation procedures. Therefore, in 1974, the FAA proposed regulations stipulating quotas and seating arrangements for the disabled. The proposed regulations have attracted considerable protest, and final regulations have not been issued.

Two other acts are of potential benefit to disabled travelers. The "Federal Highway Act of 1973" authorizes

federal grants to nonprofit agencies serving the disabled. In providing capital for such service, the act binds grant recipients to a five year commitment to continue transportation service for the disabled. Under this act, projects are selected by each state, and they are subject to approval by the UMTA. The "National Mass Transportation Act of 1974" requires mass-transit systems receiving federal aid to provide reduced-fare service for the disabled; benefits to the disabled from this act are, however, dubious, because so many physical and operational barriers prevent their travel at any cost.

Some research is being carried out to determine the best way to reduce transportation barriers for the disabled. In 1974, DOT launched a $1.4 million research program to determine the cost-benefit tradeoff between modifying conventional mass-transit systems and designing new specialized systems to meet the needs of the disabled. To date, three studies have been undertaken: a "BART Impact Study," a "Study of Physical Barrier-Free Transit for the Elderly and Handicapped," and a study of "Small-Bus Design." An additional DOT program is now testing concepts underlying the design of special buses to accommodate the disabled.

Several other governmental programs have the potential to support transportation services for the disabled. The Vocational Rehabilitation Program, The Medicaid Program, and the Developmental Disabilities Program all encompass transportation for the disabled, but because transportation is only a

secondary thrust of these programs their contributions are small.

There have been numerous attempts by the judiciary to resolve the issues involved in accessible transportation. In litigation, the disabled argue that transit authorities are required by law to provide them with transportation, and transit authorities, in turn, contend that such matters are left to their own discretion. Individual court decisions have favored each side, and no definitive decision has been arrived at.

The future of accessible transportation for the disabled seems to indicate five alternatives. (1) Upgrading of present or planned systems by removal of physical barriers. (2) Providing door-to-door service through a minibus service. (3) Doubling the present bus fleet through an improved fixed-route service. (4) Providing transit stamps for use as bus fare for elderly and disabled persons below a certain income level. (5) Serving a select group of disabled through a "coupon taxi service." These alternatives aim at examining the modification of transit systems in relation to the development of specialized services for the disabled. Specialized services appear to be advantageous; however, the DOT concludes that more information is needed about such services. Though these services are perhaps economically feasible, the disabled may not accept them as alternatives to a revamped public-transportation system which accommodates their needs.

TABLE 1
NUMBERS OF DISABLED WITH TRANSPORTATION DIFFICULTIES
IN 1970

DISABILITY	ELDERLY DISABLED	NON-ELDERLY DISABLED	TOTAL DISABLED PERSONS
Vision	1 430 000	540 000	1 970 000
Hearing	160 000	190 000	350 000
Wheelchair Reqd	230 000	190 000	430 000
Walker Required	350 000	60 000	410 000
Other Aids Reqd	2 280 000	3 210 000	5 490 000
Other Mobility Limitations	1 510 000	1 800 000	3 310 000
Acute Conditions	100 000	370 000	470 000
Institutionalized	930 000	30 000	960 000
TOTALS	6 990 000	6 400 000	13 390 000

TABLE 2
DISABLED PERSONS UNABLE TO USE MASS TRANSIT SERVICES

FUNCTIONAL DIFFICULTY	UNDER AGE 65	65 YEARS AND OLDER	TOTAL
Can leave home but cannot use transit	1 153 000	1 530 000	2 306 000
Persons unable to leave home	878 000	878 000	1 756 000
Institutionalized	30 000	930 000	960 000
Temporary acute conditions	185 000	50 000	235 000
TOTAL	2 246 000	3 011 000	5 257 000

DEMAND-RESPONSIVE TRANSPORTATION SYSTEMS

DEMAND-RESPONSIVE TRANSPORTATION SYSTEMS

In 1970 the United States Department of Transportation estimated the total U.S. population of elderly and handicapped persons to be 26.5 million. Some recently developed transportation systems in a few areas of the country attempt to better provide service for the disabled. These transportation systems benefit the disabled population by (1) increasing mobility, (2) allowing preservation of independence, dignity, and quality of life, and (3) providing medical service and recreation. One such system is a "demand-responsive transportation service." The basic operation of this service involves dispatching a vehicle in response to a patron's telephoned request while simultaneously accommodating in the vehicle other patrons with compatible destinations. Requests for service may be made just before the trip, or, in cases of regular trips, in advance.

Elements needed for the operation of a demand-responsive service include (1) a fleet of vehicles, (2) a control and dispatch center, and (3) a means of communication between the patron, the control center, and the driver. These elements are required in both of the major forms of the demand-responsive service: a "route-deviation" form, in which the vehicle deviates from a fixed route to pick up or discharge passengers at requested locations, and a "pure demand" form, in which routing and scheduling of vehicles depend entirely upon the patrons' requests.

There are three variants of the pure-demand form. "Many-to-one," the first variant, provides transportation from several

sites to a common destination such as a shopping center.

"Many-to-few," the second variant, provides transportation from multiple origins to a few destinations, such as points on a downtown loop. "Lift-line," a two-year project being conducted by the Florida Department of Transportation and the United States Department of Health and Rehabilitation, is an example of the many-to-few variant. Lift-line provides a free fixed-route system linking low-income neighborhoods to social-welfare and medical facilities. The project operates on a weekday basis; it has 25 buses, each equipped with a two-way radio for dispatching operations. Operating costs for the first year averaged $1.39 per one-way passenger trip and $0.46 per vehicle mile.

"Many-to-many," the third variant provides transportation between any origin-destination pair in the service area. Within a 3600 square mile rural New Jersey area, Pioneer on Wheels, (POW), Inc. provides an example of the many-to-many variant through its 36 vehicle service to elderly and handicapped persons. The service is divided into POW I (services for the elderly) which operates at $9,075.00 per month and POW II (services for the handicapped) which operates at $14,000.00 per month. Although both POW I and POW II are partially funded by state and federal funds, they are largely self-supported by contracts to provide for clients of agencies such as the Rehabilitation Commission and the Commission for the Blind.

The taxi industry is also seeking a role in federal programs for demand-responsive transportation as a many-to-many service. A 1970 survey estimating that taxis already carry one quarter of all public transit passengers leads the taxi industry to believe its service would be beneficial if subsidized in carrying the disabled. Present federal support of the taxi-industry development of a special demand-responsive service is limited to specific rides for specific purposes; however, in Arlington County a taxi-fare reduction program has been launched, under funding by the "Older Americans Act," which provides elderly users of Arlington taxi transportation with a flat fee of $0.15 per trip.

Information collected at the transportation system center in Cambridge, Massachusetts indicates that the many-to-many variant of pure-demand service is the most prevalent and desired transportation model. A combination of the many-to-few variant used during peak hours and many-to-many used during off hours could maximize the efficiency of a pure demand-responsive transportation system.

Because mass transit systems have the potential to reduce increasing expense of cars, consumption of petroleum, and environmental degredation, further development would benefit the entire United States population as well as to the elderly and handicapped. Annual 1970 figures indicate that private automobiles consume 55 percent of the total transportation energy while buses consume only 0.2 percent of that energy and get

four times the per-passenger gas mileage that the automobile gets. Development of mass transit systems for the entire United States would also reduce automobile-related environmental problems such as (1) air and water pollution caused by petroleum refineries, (2) solid-waste problems resulting in annual disposal of seven million junk cars and 200 million used tires, and (3) destruction of forests and wildlife caused by the five million vehicles that visit parks annually.

A recent Department of Transportation survey reveals that a typical van service would cost 50-70 cents a vehicle mile and about $1.20 to $1.40 per urban passenger trip of two to three miles. Rural costs would amount to 60-80 cents a vehicle mile and $3.50 to $7.50 per passenger trip; the cost difference results from varying market densities, differences in wage and fuel costs, service characteristics, and average trip lengths. Technological development of a demand-responsive transit service for the entire United States population requires computer dispatching, automatic vehicle monitoring, automatic scheduling, fully dynamic routing, and advanced management analysis systems for all of which prototypes are currently available. The remaining element required for implementing demand-responsive service for the disabled is a reduction of the physical and operational barriers stipulated by UMTA under "Major Travel Barriers Listed by Area of Impact." Special attention to those barriers might ensure wider use of accessible transportation systems by all United Stated citizens.

RELATED DATA

Introduction

American Society can be viewed as a dynamic socio-ecological system. This system as with any system or entity, can only be known by qualitatively identifying its various attributes in order to obtain information about the entity. Once the attributes have been qualitatively identified appropriate measures may then be devised to provide additional quantitative information. Due to the dynamic nature of the socio-ecological system, many of its qualitatively identifiable attributes are, at present, only quantifiable by approximations.

Purpose of the Data

This project paper deals primarily with the kinematics of the socio-ecological system rather than the kinetics of the system. That is, the majority of the data deals with the quantification of the trends exhibited by the variables without attempting to analyze those forces that produce the trends. The kinetic forces underlying this data have been tentatively identified and quantified by the work session participants in developing causal diagrams while conducting the various consequence analyses of the program thrusts. The identification and quantification of these forces are presented in the work session reports contained in Volume V.

Discussion

Within the social context project paper, four attributes of the American socio-ecological system were qualitatively identified and used as the primary attributes in developing scenarios descriptive of the macro environment within which the human rehabilitation system attempts to address problems caused by human impairments, disabilities and handicaps. These four qualitative attributes are (1) society's capability of satisfying various societal needs, (2) its willingness to commonly address the societal needs, (3) its common effort through government spending to address social welfare needs, and (4) it's relationship to the disabled population. Once quantified, these qualitative attributes may then be referred to as variables. Each of these variables possess identifiable qualitative attributes which in turn, when quantified become sub-variables.

Society's capability of satisfying various societal needs has been quantified in economic terms, as the per-capita net national product (NNP). Society's willingness to commonly address these societal needs was measured (again in economic terms) as total government spending as a percent of the total NNP. Society's common effort to address social welfare needs has been directly measured in terms of the funds devoted to social welfare needs. One aspect of the relative magnitude of the problem dealing with disability is approximated by using various estimates of the size of the disabled population.

Thus, the selection criteria used to determine what variables would be reported in greater detail in this paper was based on the variable's individual relevancy to the primary variables used in the scenarios.

Table 6-1 presents an overview of the recent changes in the quantitative magnitude of many of the attributes of the socio-ecological system. Additionally, this table provides quantitative data that approximates the average annual percent change over various time frames.

Table 6-2 was presented to provide an easy reference to assist in interpreting the significance of the average annual percent changes not only for the data presented in table 6-1 but also for the subsequent tables in which the average annual percent change is given. Table 6-2 was designed to be used to provide estimates of the measure of either the growth or decline in the magnitude of variables. For example, if the number of years involved is 10 years a positive average annual percent change of 7.18 percent will double the initial measure of the variable. A positive average annual percent change of 11.61 percent would triple this initial value over the same period of time. Likewise, if the measure of the variable were to experience a negative average annual percent change of 4.52 percent, the initial measure of the variable would be reduced to 1/2 its original value during a 15 year period. A negative average annual percent change of 7.07 percent would reduce the initial measure of the variable to 1/3 its original size during the same 15 year period.

The data presented in the remainder of this project is organized primarily according to the four primary scenario variables. Tables 6-3 through 6-10 deal with various major and some minor attributes of the macro economic system within society. Tables 6-11 through 6-23 and figures 6-1 through 6-3 deal with the various aspects of the general population, e.g., size, age, sex, employment, etc. Tables 6-23 through 6-27 and figure 6-4 deal with various aspects of government receipts and/or expenditures by various classification of expenditure and by the various levels of government involved, i.e., federal or state and local.

Tables 6-28 through 6-35 and figures 6-5 and 6-6 provide an overview of health and disability related expenditures. Tables 6-36 through 6-42 deal with aspects of society associated with the disable population, e.g., definitions of disability, public and private programs used to help the disabled along with some of the funding under these programs. Tables 6-43 through 6-53 deal with various estimates of the size of the disabled population, work force participation rates and non-participation rates due to health or disability reasons. Tables 6-54 through 6-51 present projections of the four primary variables used within the scenarios.

TABLE 6-1
RECENT TRENDS IN SOCIO-ECOLOGICAL ATTRIBUTES

Reference table	Subject	Unit of measure	1960	1965	1970	1973	1974	1975	Percent change, average per year 1960–70	1970–74[1]	1974–75
	POPULATION[2]										
	Total, incl. Armed Forces abroad	Millions	180.7	194.3	204.9	210.4	211.9	213.6	1.3	0.8	0.8
	Net annual increase over previous year	Millions	2.84	2.41	2.20	1.56	1.48	1.74	−2.5	−9.4	17.0
	Under 5 years	Millions	20	20	17	17	16	16	−1.7	−1.3	−2.4
	5-17 years old	Millions	44	50	53	51	51	50	1.7	−0.8	−1.1
	18-24 years old	Millions	16	20	25	26	27	28	4.3	2.2	2.6
	18 years old and over	Millions	116	125	135	142	145	147	1.5	1.7	1.9
	21 years old and over	Millions	109	115	124	130	132	135	1.3	1.6	1.8
	65 years old and over	Millions	17	18	20	21	22	22	1.9	2.1	2.6
	Male	Millions	89.3	95.6	100.3	102.8	103.4	104.2	1.2	0.8	0.8
	Female	Millions	91.4	98.7	104.6	107.6	108.4	109.4	1.4	0.9	0.9
	White	Millions	160.0	171.2	179.5	183.5	184.5	185.6	1.2	0.7	0.6
	Negro and other	Millions	20.6	23.1	25.4	26.9	27.4	28.0	2.1	1.9	2.3
	Negro	Millions	19.0	21.1	22.6	23.9	24.2	24.5	1.8	1.5	1.4
	Percent of total population	Percent	11	11	11	11	11	11	(ns)	(ns)	(ns)
	Percent in the South	Percent	60	54	53	52	53	52	(ns)	(ns)	(ns)
	Persons of Spanish origin[3]	Millions	(na)	(na)	(na)	10.6	10.8	11.2	(na)	(na)	3.8
	Foreign born	Millions	9.7	(na)	9.6	(na)	(na)	(na)	−0.1	(na)	(na)
	Native of foreign or mixed parentage	Millions	24.3	(na)	24.0	(na)	(na)	(na)	−0.1	(na)	(na)
	Resident population	Millions	180.0	193.5	203.8	208.9	211.4	213.1	1.3	0.9	0.8
	Per square mile	Rate	51	55	57	59	60	60	1.1	1.3	–
	Northeast	Millions	44.8	47.5	49.2	49.5	49.4	49.5	0.9	0.1	0.1
	North Central	Millions	51.7	54.2	56.7	57.5	57.6	57.7	0.9	0.4	0.2
	South	Millions	55.2	59.6	63.0	66.2	67.1	68.1	1.3	1.6	1.4
	West	Millions	28.3	32.2	34.9	36.7	37.3	37.9	2.1	1.6	1.7
	Metropolitan area population[4]	Millions	126.7	(na)	148.3	152.5	(na)	(na)	1.6	0.9	(na)
	Nonmetropolitan area population	Millions	53.3	(na)	55.5	57.4	(na)	(na)	0.4	1.1	(na)
	Male, 18 years old and over[5,6]	Millions	60.6	58.0	62.5	65.2	66.6	67.9	0.3	1.6	1.9
	Single	Percent	25.3	17.7	18.9	19.5	20.1	20.8	(ns)	(ns)	(ns)
	Married	Percent	69.0	76.2	75.3	74.5	73.7	72.8	(ns)	(ns)	(ns)
	Divorced	Percent	1.9	2.5	2.5	3.0	3.5	3.7	(ns)	(ns)	(ns)
	Female, 18 years old and over[5,6]	Millions	64.9	63.8	70.0	72.8	74.0	75.3	0.8	1.4	1.8
	Single	Percent	19.0	12.4	13.7	13.9	14.3	14.6	(ns)	(ns)	(ns)
	Married	Percent	65.6	70.5	68.5	68.1	67.6	66.7	(ns)	(ns)	(ns)
	Divorced	Percent	2.6	3.3	3.9	4.5	4.9	5.3	(ns)	(ns)	(ns)
	Households[6]	Millions	52.8	57.4	63.4	68.3	69.9	71.1	1.8	2.5	1.8
	Average size of households	Persons	3.33	3.29	3.14	3.01	2.97	2.94	(ns)	(ns)	(ns)
	One-person households	Millions	6.9	8.6	10.9	12.6	13.4	13.9	4.6	5.4	4.3
	Families[6]	Millions	45.1	[7]48.0	[7]51.6	54.4	55.1	55.7	1.4	1.6	1.2
	Female head	Millions	4.5	5.0	5.6	6.6	6.8	7.2	2.2	5.0	6.4
	White	Millions	40.9	[7]43.1	[7]46.0	48.5	48.9	49.5	1.2	1.5	1.1
	Female head	Percent	8.7	9.0	9.1	9.6	9.9	10.5	(ns)	(ns)	(ns)
	Average size	Persons	3.61	3.64	3.54	3.42	3.38	3.36	(ns)	(ns)	(ns)
	Negro and other	Millions	4.2	[7]4.8	[7]5.2	5.9	6.1	6.3	2.1	4.1	2.1
	Female head	Percent	22.4	23.7	26.7	32.8	31.8	32.4	(ns)	(ns)	(ns)
	Average size	Persons	4.39	4.37	4.32	4.01	3.90	3.89	(ns)	(ns)	(ns)
	Births, live	Millions	4.26	3.76	3.73	3.14	3.16	3.15	−1.3	−4.1	−0.3
	Negro and other	Percent	15.4	16.9	17.2	18.7	18.5	19.8	(ns)	(ns)	(ns)
	Rate, all races, per 1,000 population	Rate	23.7	19.4	18.4	14.9	14.9	14.8	−2.5	−5.1	−0.7
	White	Rate	22.7	18.3	17.4	13.9	14.0	(na)	−2.6	−5.3	(na)
	Negro and other	Rate	32.1	27.6	25.1	21.9	21.4	(na)	−2.4	−3.9	(na)
	Illegitimate births, live	1,000	224	291	399	407	418	(na)	5.9	1.2	(na)
	Deaths	Millions	1.71	1.83	1.92	1.97	1.93	1.91	1.2	0.2	−1.2
	Rate, all races, per 1,000 population	Rate	9.5	9.4	9.5	9.4	9.2	9.0	–	−0.8	−2.2
	Infant death rate, per 1,000 live births	Rate	26.0	24.7	20.0	17.7	16.7	16.1	−2.6	−4.4	−3.6
	White	Rate	22.9	21.5	17.8	15.8	14.8	14.4	−2.5	−4.5	−2.7
	Negro and other	Rate	43.2	40.3	30.9	26.2	24.9	22.9	−3.3	−5.3	−8.0
	Deaths per 100,000 population	Rate	952	943	945	940	915	896	−0.1	−0.8	−2.1
	Diseases of heart	Rate	369	367	362	361	349	339	−0.2	−0.9	−2.9
	Malignancies	Rate	149	154	163	167	171	174	0.9	1.2	1.8
	Cerebrovascular diseases	Rate	108	104	102	102	98	92	−0.6	−0.9	−6.1
	Accidents	Rate	52	56	56	55	50	48	0.8	−3.2	−4.0

See notes on page 16.

TABLE 6-1
RECENT TRENDS IN SOCIO-ECOLOGICAL ATTRIBUTES (CONTINUED)

Reference table	Subject	Unit of measure	1960	1965	1970	1973	1974	1975	Percent change, average per year: 1960–70	1970–74[1]	1974–75
	POPULATION[2] – Con.										
	Marriages	Millions	1.52	1.80	2.16	2.28	2.23	2.13	3.6	0.8	–4.7
	Per 1,000 population	Rate	8.5	9.3	10.6	10.9	10.5	10.0	2.2	–0.2	–4.8
	Per 1,000 unmarried women, 15 yr. and over	Rate	74	75	77	76	72	(na)	0.4	–1.5	(na)
	Divorces	1,000	393	479	708	915	977	1,026	6.1	8.4	5.0
	Per 1,000 population	Rate	2.2	2.5	3.5	4.4	4.6	4.8	4.8	7.1	4.3
	Per 1,000 married women, 15 yr. and over	Rate	9	11	15	18	19	(na)	4.9	6.7	(na)
	Immigrants, total	1,000	265	297	373	400	395	386	[illegible]	1.4	–2.3
	HEALTH										
	Life expectancy at birth, male	Years	66.6	66.8	67.1	67.6	68.2	(na)	0.1	0.4	(na)
	Life expectancy at birth, female	Years	73.1	73.7	74.8	75.3	75.9	(na)	0.2	0.2	(na)
	National health expenditures, total	Bil. dol.	25.9	38.9	69.2	95.4	104.0	118.5	10.3	10.7	13.9
	Expenditures per capita	Dollars	137	188	325	438	485	(na)	9.0	10.5	(na)
	Public	Percent	24.7	24.5	36.5	38.1	39.3	42.1	(ns)	(ns)	(ns)
	Private consumer expenditures for health care	Bil. dol.	18.0	26.8	40.9	53.8	58.4	(na)	8.6	9.3	(na)
	Met by private insurance benefits	Percent	27.8	32.6	38.5	41.6	44.2	(na)	(ns)	(ns)	(ns)
	Indexes of medical care prices, total (1967 = 100)		79.1	88.5	120.6	137.7	150.5	168.6	4.3	5.7	12.0
	Physicians' fees (1967 = 100)		77.0	88.3	121.4	138.2	150.9	169.4	4.7	5.6	12.3
	Semiprivate room rates (1967 = 100)		57.3	75.9	145.4	182.1	201.5	236.1	9.8	8.5	17.2
	Physicians, total number, M.D.'s	1,000	261	292	334	366	380	(na)	2.5	3.3	(na)
	Patient care, general practice	1,000	(na)	56	53	50	50	(na)	[6]–4.3	–1.5	(na)
	Newly-licensed physicians	1,000	8	9	11	17	(na)	(na)	3.2	14.8	(na)
	Dentists, number	1,000	103	109	116	122	(na)	(na)	1.2	1.7	(na)
	Nurses, registered, number	1,000	504	613	700	815	857	(na)	3.3	5.2	(na)
	Hospitals	1,000	6.9	7.1	7.1	7.1	7.2	(na)	0.4	0.2	(na)
	Beds	Millions	1.7	1.7	1.6	1.5	1.5	(na)	–0.3	–1.8	(na)
	Beds per 1,000 population	Rate	9.3	8.9	8.0	7.3	7.2	(na)	–1.5	–2.8	(na)
	Average in-patients treated daily	Millions	1.4	1.4	1.3	1.2	1.2	(na)	–0.8	–2.8	(na)
	Occupancy rate[9]	Rate	84.0	82.3	80.3	77.5	77.2	(na)	–0.4	–1.0	(na)
	Short-term hospitals[10]	1,000	5.4	5.7	5.9	5.9	6.0	(na)	0.8	0.5	(na)
	Beds	Millions	.8	.7	.8	.9	.9	(na)	2.9	2.4	(na)
	Beds per 1,000 population	Rate	3.6	3.9	4.2	4.3	4.4	(na)	(ns)	(ns)	(ns)
	Average in-patients treated daily	Millions	.5	.6	.7	.7	.7	(na)	3.3	1.5	(na)
	Occupancy rate[9]	Rate	74.7	76.0	78.0	75.4	75.3	(na)	0.4	–0.9	(na)
	Expense per patient day	Dollars	32	44	81	115	128	(na)	9.6	12.1	(na)
	Patient-care episodes in mental health facilities	1,000	(na)	2,637	(na)	5,249	(na)	(na)	(na)	(na)	(na)
	Bed disability, days per male	Days	5.3	5.3	5.2	5.3	5.8	(na)	(ns)	(ns)	(ns)
	Days per female	Days	6.7	7.0	6.9	7.3	7.5	(na)	(ns)	(ns)	(ns)
	Federal food programs:										
	Food stamps issued, value	Mil. dol.	(x)	85	1,090	3,884	4,727	7,259	[5]86.3	44.3	53.6
	Paid for by participants	Percent	(x)	62.4	49.5	45.1	42.5	39.6	(ns)	(ns)	(ns)
	Food stamps—monthly participation	Millions	(x)	.4	4.3	12.2	12.9	17.1	[5]59.1	31.2	32.7
	Federal Govt. cost per participant	Dollars	(x)	77	127	175	211	257	[5]10.8	13.5	21.8
	Recipients, needy families program	Millions	4.3	5.8	4.1	2.8	2.4	.8	–0.4	–12.7	–68.9
	Cost to government	Mil. dol.	58	227	289	241	189	39	17.2	–10.1	–79.4
	EDUCATION										
	School expenditures, total	Bil. dol.	24.7	40.2	70.2	89.2	98.3	108.7	11.0	8.8	10.6
	Elementary and secondary	Bil. dol.	18.0	27.3	45.5	57.8	63.3	68.5	9.7	8.6	8.2
	Expenditures per student	Dollars	423	568	877	1,158	1,271	1,381	7.6	9.7	8.7
	Per student, public school	Dollars	433	576	889	1,158	1,269	1,386	7.5	9.3	9.2
	Higher education	Bil. dol.	6.7	13.1	24.7	31.4	35.0	40.2	13.9	9.1	14.9
	Public	Bil. dol.	10.7	31.4	56.8	72.8	80.3	88.6	11.2	9.0	10.3
	Nonpublic	Bil. dol.	5.0	9.0	13.4	16.4	18.0	20.1	10.4	7.7	11.7
	School enrollment, total	Millions	46.3	53.8	60.4	59.4	60.3	61.0	2.7	(–z)	1.2
	Nursery	Millions	(na)	(na)	1.1	1.3	1.6	1.7	(na)	9.8	6.2
	Elementary (kinderg. and grades 1-8)	Millions	32.4	35.1	37.2	34.6	34.4	33.9	1.4	–1.9	–1.5
	High school (grades 9-12)	Millions	10.2	13.0	14.7	15.3	15.4	15.7	3.7	1.2	1.9
	Nonpublic elementary and secondary	Percent	14.0	14.2	10.8	10.0	9.8	10.1	(na)	(na)	(na)
	Higher education	Millions	3.5	5.7	7.4	8.2	8.8	8.7	7.5	4.4	10.2

See notes on page 16.

TABLE 6-1
RECENT TRENDS IN SOCIO-ECOLOGICAL ATTRIBUTES (CONTINUED)

Reference table	Subject	Unit of measure	1960	1965	1970	1973	1974	1975	Percent change, average per year 1960–70	1970–74[1]	1974–75
	EDUCATION—Con.										
	Enrollment in public schools	Millions	38.0	45.1	52.2	51.6	52.3	52.8	3.0	(r)	1.0
	Elementary and secondary	Millions	36.7	41.3	46.1	45.0	45.0	44.6	2.3	−0.6	−0.9
	Enrollment in nonpublic schools	Millions	7.2	8.7	8.1	7.8	8.0	8.2	1.2	−0.3	2.5
	Enrollment, by race:										
	White, total	Millions	40.3	48.7	51.7	50.6	51.0	51.4	2.5	−0.4	0.9
	Elementary and secondary	Millions	37.0	41.4	45.0	43.3	43.2	42.9	2.0	−1.0	−0.7
	Higher education	Millions	3.3	5.3	6.8	7.3	7.8	8.5	7.3	3.6	9.4
	Negro and other	Millions	5.9	7.1	8.6	8.8	9.3	9.5	3.9	1.8	2.9
	Elementary and secondary	Millions	5.7	6.7	8.0	7.9	8.2	8.4	3.5	0.7	1.7
	Higher education	Millions	.2	.4	.7	.9	1.0	1.2	11.2	12.5	13.0
	Years of school completed, persons 25 years old and over:										
	Median for all persons	Years	10.6	11.8	12.2	12.3	12.3	12.3	(ns)	(ns)	(ns)
	Median for Negroes	Years	8.0	9.0	9.9	10.6	10.7	10.9	(ns)	(ns)	(ns)
	Public school teachers, elem. and sec	1,000	1,408	1,710	2,055	2,138	2,159	2,168	3.9	1.2	0.4
	Pupil-teacher ratio, public elementary	Ratio	28.4	27.6	24.3	22.9	22.7	22.4	(ns)	(ns)	(ns)
	Public secondary	Ratio	21.7	20.8	19.8	19.3	18.7	18.6	(ns)	(ns)	(ns)
	Public school teachers, avg. annual salary	$1,000	5.0	6.2	8.6	10.2	10.8	11.7	5.6	5.9	8.3
	High school graduates	Millions	1.9	2.7	2.9	3.0	3.1	3.1	4.5	1.7	1.4
	College graduates	Millions	.4	.5	.8	.9	.9	.9	7.3	4.5	−0.2
	College (public) costs, total per full-time resident	Dollars	820	950	1,205	1,428	1,492	1,708	3.9	5.5	14.5
	LAW ENFORCEMENT										
	Number of crimes, total	1,000	3,384	4,739	8,098	8,718	10,253	11,257	9.1	6.1	9.8
	Against persons	1,000	288	387	739	876	975	1,026	9.9	7.2	5.2
	Robbery	1,000	108	139	350	384	442	465	12.5	6.0	5.2
	Against property	1,000	3,096	4,352	7,359	7,842	9,279	10,230	9.0	6.0	10.2
	Crimes per 100,000 inhabitants	Rate	1,887	2,449	3,985	4,158	4,850	5,282	7.8	5.0	8.9
	Against persons	Rate	161	200	364	417	461	482	8.5	6.1	4.6
	Against property	Rate	1,726	2,249	3,621	3,737	4,389	4,800	7.7	4.9	9.4
	Homicide victims	1,000	8.5	10.7	16.8	20.5	21.5	(na)	7.1	8.2	(na)
	Law enforcement officers killed by felons, total	Number	(na)	53	100	134	132	129	[9]13.5	7.2	−2.3
	Firearms, domestic production	1,000	1,508	2,355	[11]5,290	4,844	5,639	5,768	[11]15.0	[11]1.3	2.3
	Imports	1,000	655	768	826	914	903	1,084	2.3	2.3	20.0
	Public expenditures for law enforcement	Bil. dol.	3.3	4.8	8.6	13.1	15.0	(na)	9.9	14.9	(na)
	Police protection	Bil. dol.	2.0	2.8	5.1	7.6	8.5	(na)	9.6	13.8	(na)
	Judicial	Bil. dol.	.6	.7	1.2	1.6	1.8	(na)	7.1	10.9	(na)
	Corrections	Bil. dol.	.7	1.0	1.7	2.7	3.7	(na)	9.0	17.4	(na)
	Federal	Bil. dol.	.3	.4	1.0	1.7	2.0	(na)	12.9	19.0	(na)
	State	Bil. dol.	.8	1.1	2.1	3.3	3.9	(na)	10.7	16.3	(na)
	Local	Bil. dol.	2.3	3.1	5.5	8.1	9.1	(na)	9.1	13.6	(na)
	Federal outlays for crime reduction	Bil. dol.	.5	.8	.9	2.3	2.4	2.8	6.0	29.8	16.0
	Police employees:										
	State and local government	1,000	303.8	348.6	449.7	511.1	539.4	(na)	4.0	4.7	(na)
	Local government	1,000	271.6	308.5	393.8	429.5	449.6	(na)	3.8	3.4	(na)
	Corrections employees:										
	State and local government	1,000	(na)	110.7	142.3	187.3	203.2	(na)	[9]5.2	9.3	(na)
	Local government	1,000	(na)	41.2	52.0	75.1	82.1	(na)	[9]4.8	12.1	(na)
	ENVIRONMENT										
	Water use, daily average	Bil. gal.	323	270	378	(na)	(na)	[12]371	1.6	(na)	(na)
	Capital expenditures for abatement of air and water pollution, total	Bil. dol.	(na)	(na)	(na)	4.9	5.2	6.2	(na)	(na)	17.9
	Air	Bil. dol.	(na)	(na)	(na)	3.2	3.3	3.8	(na)	(na)	13.4
	Water	Bil. dol.	(na)	(na)	(na)	1.8	1.9	2.4	(na)	(na)	25.9
	Federal obligations for pollution control	Bil. dol.	(na)	(na)	1.1	4.7	4.3	6.1	(na)	41.8	40.8
	Water	Bil. dol.	(na)	(na)	.7	3.7	3.5	5.2	(na)	50.4	49.5
	Air	Bil. dol.	(na)	(na)	.2	.5	.5	.3	(na)	26.9	−29.0
	State government expenditures:										
	Water quality control	Mil. dol.	(na)	(na)	157.1	608.1	636.0	(na)	(na)	41.8	(na)
	Air quality control	Mil. dol.	(na)	(na)	22.8	58.7	71.6	(na)	(na)	33.1	(na)

See notes on page 16.

TABLE 6-1
RECENT TRENDS IN SOCIO-ECOLOGICAL ATTRIBUTES (CONTINUED)

Reference table	Subject	Unit of measure	1960	1965	1970	1973	1974	1975	Percent change, average per year 1960–70	1970–74[1]	1974–75
	ENVIRONMENT—Continued										
	Air pollutants emitted:										
	Carbon monoxides	Mil. tons	(na)	(na)	187.3	(na)	94.6	(na)	(na)	−3.1	(na)
	Sulfur oxides	Mil. tons	(na)	(na)	34.3	(na)	31.4	(na)	(na)	−2.2	(na)
	Hydrocarbons	Mil. tons	(na)	(na)	32.1	(na)	30.4	(na)	(na)	−1.4	(na)
	Particulates[13]	Mil. tons	(na)	(na)	27.5	(na)	19.5	(na)	(na)	−8.2	(na)
	Nitrogen oxides	Mil. tons	(na)	(na)	20.4	(na)	22.5	(na)	(na)	2.5	(na)
	Synthetic organic pesticides:										
	Production	Mil. lb.	648	877	1,034	1,289	(na)	(na)	4.8	7.6	(na)
	Value	Mil. dol.	307	577	1,058	1,493	(na)	(na)	13.2	12.2	(na)
	FEDERAL GOVERNMENT										
	Budget receipts	Bil. dol.	93	117	194	232	265	281	7.7	8.1	6.1
	Individual income tax receipts	Bil. dol.	41	48	90	103	119	122	8.3	7.1	2.9
	Percent of total	Percent	44.0	41.8	46.7	44.4	44.9	43.6	(ns)	(ns)	(ns)
	Income tax per capita	Dollars	219	256	413	515	585	(na)	6.5	9.1	(na)
	Social insurance taxes[14]	Bil. dol.	15	22	45	65	77	87	11.9	14.1	12.6
	Percent of total	Percent	15.9	19.1	23.4	27.8	28.9	30.7	(ns)	(ns)	(ns)
	Corporation income tax receipts	Bil. dol.	22	26	33	36	39	41	4.3	4.2	5.2
	Percent of total	Percent	23.2	21.8	16.9	15.6	14.6	14.5	(ns)	(ns)	(ns)
	Budget outlays	Bil. dol.	92	118	197	247	268	325	7.9	8.1	20.9
	In constant (1969) dollars	Bil. dol.	120	139	181	192	190	212	4.2	1.2	11.5
	National defense	Bil. dol.	45	49	79	75	79	87	5.8	−0.2	10.2
	Percent of total	Percent	49.0	41.0	40.3	30.5	29.3	26.7	(ns)	(ns)	(ns)
	Income security	Bil. dol.	18	26	43	73	84	109	8.9	18.3	29.7
	Percent of total	Percent	19.8	21.7	21.9	29.6	31.4	33.5	(ns)	(ns)	(ns)
	Education, manpower, social services	Bil. dol.	1	2	8	12	12	15	23.0	10.1	31.0
	Interest	Bil. dol.	8	10	18	23	28	31	8.2	11.3	10.3
	Surplus (+) or deficit (−)	Bil. dol.	+.3	−1.6	−2.8	−14.3	−3.5	−43.8	(ns)	(ns)	(ns)
	Gross public debt outstanding	Bil. dol.	291	323	383	468	486	544	2.8	6.2	11.9
	Gross public debt per capita	Dollars	1,572	1,613	1,807	2,174	2,238	2,496	1.4	5.5	11.5
	Federal civilian employment	Millions	2.4	2.5	2.9	2.8	2.9	2.9	2.0	−0.2	0.1
	Department of Defense	Percent	43.7	40.9	40.9	37.3	37.0	36.0	(ns)	(ns)	(ns)
	Percent of total employment	Percent	3.7	3.6	3.7	3.3	3.1	3.1	(ns)	(ns)	(ns)
	Federal civilian payrolls, total annual	Bil. dol.	13.2	18.0	28.6	34.5	37.6	40.7	8.0	7.1	8.3
	Percent of total Federal outlays	Percent	14.4	15.2	14.5	14.0	14.0	12.6	(ns)	(ns)	(ns)
	STATE AND LOCAL GOVERNMENTS										
	Revenue, all governments, incl. Federal	Bil. dol.	153	203	334	434	485	(na)	8.1	9.8	(na)
	State	Bil. dol.	26	39	69	97	108	(na)	10.3	11.9	(na)
	Local	Bil. dol.	27	38	60	81	88	(na)	8.3	10.0	(na)
	Expenditures, all govts., incl. Federal	Bil. dol.	151	206	333	437	480	(na)	8.2	9.6	(na)
	State	Bil. dol.	22	31	56	78	86	(na)	9.8	11.3	(na)
	Local	Bil. dol.	39	55	92	127	139	(na)	9.0	10.9	(na)
	Debt outstanding, all governments, including Federal	Bil. dol.	356	417	514	657	693	(na)	3.7	7.8	(na)
	State	Bil. dol.	19	27	42	59	65	(na)	8.3	11.5	(na)
	Local	Bil. dol.	51	72	102	129	141	(na)	7.2	8.4	(na)
	Aid from Federal Government	Bil. dol.	7.2	10.9	24.0	41.8	43.3	49.7	12.8	15.9	14.8
	General revenue, total, State and local	Bil. dol.	51	74	131	190	208	(na)	10.0	12.3	(na)
	From Federal Government	Percent	13.8	14.9	18.7	20.6	20.1	(na)	(ns)	(ns)	(ns)
	From own taxes	Percent	71.5	69.2	66.4	63.7	62.9	(na)	(ns)	(ns)	(ns)
	Taxes per capita	Dollars	201	264	427	577	618	(na)	7.8	9.7	(na)
	Direct expenditures, State and local	Bil. dol.	61	87	148	205	226	(na)	9.3	11.1	(na)
	Education	Percent	30.7	33.0	35.6	34.0	33.6	(na)	(ns)	(ns)	(ns)
	Highways	Percent	15.5	14.1	11.1	9.1	8.8	(na)	(ns)	(ns)	(ns)
	Public welfare	Percent	7.2	7.3	9.9	11.5	11.0	(na)	(ns)	(ns)	(ns)
	Direct general expenditures per capita[15]	Dollars	288	385	648	864	940	(na)	8.4	9.9	(na)
	State and local govt. employment, Oct	Millions	8.4	8.0	10.1	11.4	11.8	12.1	4.7	3.8	2.6
	Education	Millions	2.9	4.0	5.3	5.9	6.2	6.3	8.1	4.0	1.1
	State	Millions	.5	.7	1.2	1.3	1.4	1.4	9.8	3.5	3.2
	Local	Millions	2.4	3.2	4.1	4.6	4.8	4.9	5.3	4.2	0.8
	State and local govt. payroll, October	Bil. dol.	2.2	3.4	5.9	8.0	8.8	9.7	10.3	10.0	9.4

See notes on page 16.

TABLE 6-1
RECENT TRENDS IN SOCIO-ECOLOGICAL ATTRIBUTES (CONTINUED)

Reference table	Subject	Unit of measure	1960	1965	1970	1973	1974	1975	Percent change, average per year: 1960–70	1970–74[1]	1974–75
	STATE AND LOCAL GOVERNMENTS—Con.										
	City government finances, all cities:										
	Revenue	Bil. dol.	14.9	20.3	32.7	48.5	52.8	(na)	8.2	12.7	(na)
	From Federal and State govts	Bil. dol.	2.3	3.5	7.9	14.7	16.6	(na)	13.0	20.4	(na)
	Property taxes	Bil. dol.	5.2	6.5	9.1	11.9	12.2	(na)	5.8	7.6	(na)
	General expenditure	Bil. dol.	11.8	16.0	27.7	38.0	42.5	(na)	8.9	11.3	(na)
	Per capita	Dollars	102	138	210	295	322	(na)	7.5	11.3	(na)
	Gross debt outstanding	Bil. dol.	23.2	31.9	43.8	56.0	61.2	(na)	6.6	8.7	(na)
	Per capita	Dollars	200	274	332	425	464	(na)	5.2	8.7	(na)
	WELFARE										
	Public social welfare expenditures, total	Bil. dol.	52.3	77.2	145.8	214.4	239.3	286.5	10.8	13.2	18.7
	Percent of total govt. expenditures	Percent	38.0	42.4	47.8	55.3	55.9	58.4	(na)	(na)	(na)
	Federal	Bil. dol.	25.0	37.7	77.3	122.6	137.7	165.9	12.0	15.5	20.6
	State and local	Bil. dol.	27.3	39.5	68.4	91.8	101.6	120.6	9.6	10.4	18.6
	Per capita, current dollars	Dollars	285	391	701	1,003	1,111	1,319	9.4	12.2	18.7
	1975 dollars	Dollars	475	615	941	1,209	1,232	1,319	7.1	7.0	7.1
	Social insurance	Bil. dol.	19.3	28.1	54.7	86.2	99.0	123.4	11.0	16.0	24.8
	OASDHI[16] (Social Security)	Bil. dol.	11.0	17.0	36.8	57.8	66.3	78.5	12.8	15.8	18.4
	Medicare	Bil. dol.	(x)	(x)	7.1	9.5	11.3	14.8	(x)	12.2	30.3
	Unemployment insurance	Bil. dol.	2.8	3.0	3.8	6.1	6.7	14.4	3.0	14.9	116.1
	Education	Bil. dol.	17.6	28.1	50.9	65.4	70.2	78.4	11.2	8.3	11.8
	Public aid	Bil. dol.	4.1	6.3	16.5	28.7	32.0	40.5	14.9	18.0	26.7
	Health and medical[17]	Bil. dol.	4.5	6.2	9.8	13.2	14.4	16.6	8.1	10.2	15.8
	Veterans	Bil. dol.	5.5	8.0	9.1	13.0	14.1	16.7	5.2	11.7	18.1
	Housing	Bil. dol.	.2	.3	.7	2.2	2.6	3.0	14.8	38.2	15.7
	Federal grants to State and local govts	Bil. dol.	6.8	10.6	23.6	41.0	42.2	48.5	13.2	15.7	15.0
	Social welfare	Percent	52.8	53.3	70.2	58.6	60.3	62.3	(na)	(na)	(na)
	OASDHI beneficiaries, end of year	Millions	14.8	20.9	26.2	29.9	30.9	32.1	5.9	4.1	4.0
	Retired workers	Millions	9.1	11.1	13.3	15.4	16.0	16.6	5.2	4.6	3.9
	Monthly benefits in current-payment status	Bil. dol.	11.1	18.1	31.8	51.1	58.2	68.8	11.0	16.5	14.4
	Average monthly benefits paid to retired workers, 1975 dollars	Dollars	138	148	165	200	201	207	1.8	5.1	3.0
	Social Security (old-age and survivors) trust fund assets, end of year	Bil. dol.	20.3	18.2	32.5	36.5	37.8	37.0	4.8	3.9	−2.1
	Hospital insurance enrollment (Medicare)	Millions	(x)	[18]19.1	20.4	23.3	23.9	(na)	[18]2.1	4.1	(na)
	Benefit payments	Bil. dol.	(x)	[18]2.5	5.1	7.0	8.1	(na)	[18]26.6	15.3	(na)
	Medical insurance enrollment (Medicare)	Millions	(x)	[18]17.7	19.6	22.5	23.2	(na)	[18]3.4	4.3	(na)
	Benefit payments	Bil. dol.	(x)	[18].7	2.0	2.5	3.4	(na)	[18]43.4	14.2	(na)
	Public aid:										
	Supplemental Security Income:[19]										
	Recipients, total	Millions	(x)	(x)	(x)	(x)	4.0	4.3	(x)	(x)	8.0
	Aged	Millions	(x)	(x)	(x)	(x)	2.3	2.3	(x)	(x)	0.9
	Disabled	Millions	(x)	(x)	(x)	(x)	1.6	1.9	(x)	(x)	18.2
	Payments, total	Bil. dol.	(x)	(x)	(x)	(x)	5.1	5.7	(x)	(x)	12.1
	Aged	Bil. dol.	(x)	(x)	(x)	(x)	2.4	2.5	(x)	(x)	4.2
	Disabled	Bil. dol.	(x)	(x)	(x)	(x)	2.6	3.1	(x)	(x)	20.2
	Public assistance recipients:										
	Families with dependent children	Millions	.8	1.1	2.8	3.2	3.3	3.6	12.3	6.7	7.3
	Individual recipients	Millions	3.1	4.4	9.7	10.8	11.0	11.4	12.1	3.3	3.5
	Old-age[20]	Millions	2.3	2.1	2.1	1.8	(x)	(x)	−1.0	−4.4	(x)
	Permanently, totally disabled[20]	Millions	.4	.6	.9	1.3	(x)	(x)	9.7	10.9	(x)
	Public assistance payments, total	Bil. dol.	3.8	5.5	14.5	21.4	20.7	23.0	14.3	9.3	11.4
	Families with dependent children	Bil. dol.	1.1	1.8	4.9	7.3	8.0	8.6	16.5	13.3	8.1
	Medical assistance	Bil. dol.	(x)	(x)	5.9	9.8	11.5	13.0	(x)	18.0	12.5
	Old-age[20]	Bil. dol.	1.9	2.0	1.9	1.7	(x)	(x)	−0.3	−2.1	(x)
	Permanently, totally disabled[20]	Bil. dol.	.3	.5	1.0	1.6	(x)	(x)	13.0	17.1	(x)
	NATIONAL DEFENSE										
	Federal outlays for national defense	Bil. dol.	45.2	48.6	79.3	75.1	78.6	86.6	5.8	−0.2	10.2
	In constant 1976 dollars	Bil. dol.	104.2	100.1	128.4	98.9	96.1	93.9	2.1	−7.0	−2.3
	Percent of total Federal outlays	Percent	49.0	41.0	40.3	30.5	29.3	26.7	(na)	(na)	(na)
	Percent of gross national product	Percent	9.1	7.4	8.3	6.1	5.8	6.0	(na)	(na)	(na)
	Worldwide military expenditures	Bil. dol.	[21]122	160	235	280	315	(na)	[21]6.6	7.6	(na)
	U.S. as percent of world total	Percent	[21]39	32	33	28	27	(na)	(na)	(na)	(na)

See notes on page 16.

TABLE 6-1
RECENT TRENDS IN SOCIO-ECOLOGICAL ATTRIBUTES (CONTINUED)

Reference table	Subject	Unit of measure	1960	1965	1970	1973	1974	1975	Percent change, average per year 1960–70	1970–74[1]	1974–75
	NATIONAL DEFENSE—Con.										
	Foreign military assistance grants	Bil. dol.	1.7	2.0	.5	.5	.7	.8	−11.1	7.8	9.5
	Foreign military sales deliveries	Bil. dol.	(na)	.9	1.8	1.8	3.4	4.8	[9]16.0	17.4	17.5
	Defense-related Federal employment[23]	Millions	3.6	3.8	4.4	3.4	3.3	3.2	2.1	−7.0	−2.1
	Military personnel on active duty	Millions	2.5	2.7	3.1	2.3	2.2	2.1	2.2	−8.4	−1.6
	U.S. military in foreign countries	1,000	633	853	888	493	480	454	3.4	−14.3	−5.4
	Military reserves not on active duty	Millions	4.1	2.6	3.9	3.4	3.1	2.7	−1.3	−4.2	−13.3
	Federal outlays for veterans benefits	Bil. dol.	5.5	5.7	8.7	12.0	13.4	18.6	4.7	11.4	23.9
	Veterans, total	Millions	23.8	25.3	27.6	29.1	29.3	29.5	1.5	1.4	0.7
	Veterans on compensation and benefit rolls[23]	Millions	4.0	4.5	4.7	4.9	4.9	4.9	1.8	0.8	−0.3
	EMPLOYMENT AND EARNINGS										
	Labor force, total	Millions	72.1	77.2	85.9	91.0	93.2	94.8	1.8	2.1	1.7
	Civilian labor force	Millions	69.6	74.5	82.7	88.7	91.0	92.6	1.7	2.4	1.8
	Employed	Millions	65.8	71.1	78.6	84.4	85.9	84.8	1.8	2.2	−1.3
	Unemployed, total	Millions	3.9	3.4	4.1	4.3	5.1	7.8	0.6	5.6	54.3
	16-24 years old	Millions	1.3	1.4	2.0	2.2	2.8	3.6	4.3	7.1	28.1
	Unemployment rate, total	Percent	5.5	4.5	4.9	4.9	5.6	8.5	(na)	(na)	(na)
	White	Percent	4.9	4.1	4.5	4.3	5.0	7.8	(na)	(na)	(na)
	Male	Percent	4.8	3.6	4.0	3.7	4.3	7.2	(na)	(na)	(na)
	Female	Percent	5.3	5.0	5.4	5.3	6.1	8.6	(na)	(na)	(na)
	Negro and other	Percent	10.2	8.1	8.2	8.9	9.9	13.9	(na)	(na)	(na)
	Male	Percent	10.7	7.4	7.3	7.6	9.1	13.7	(na)	(na)	(na)
	Female	Percent	9.4	9.2	9.3	10.5	10.7	14.0	(na)	(na)	(na)
	Persons 16-24 years old	Percent	11.2	10.1	11.0	10.5	11.8	16.1	(na)	(na)	(na)
	Married men, wife present	Percent	3.7	2.4	2.6	2.3	2.7	5.1	(na)	(na)	(na)
	Insured unemployed, average weekly	Millions	1.9	1.3	1.8	1.6	2.3	4.0	−0.6	5.8	78.6
	Nonfarm employment, total	Millions	54.2	60.8	70.9	76.8	78.4	77.0	2.7	2.5	−1.8
	Goods-related industries, total	Millions	20.4	21.9	23.5	24.7	24.7	22.5	1.4	1.2	−8.6
	Manufacturing	Millions	16.8	18.1	19.3	20.1	20.0	18.3	1.4	0.9	−8.3
	Service-related industries, total	Millions	33.8	38.9	47.4	52.1	53.7	54.4	3.4	3.1	1.4
	Wholesale and retail trade	Millions	11.4	12.7	15.0	16.7	17.0	16.9	2.8	3.1	−0.4
	Government	Millions	8.4	10.1	12.8	13.7	14.2	14.8	4.2	3.1	4.2
	Female labor force, total	Millions	22.5	26.0	31.2	33.9	35.3	36.5	3.3	3.1	3.4
	Median age	Years	40.3	40.4	38.7	38.6	35.9	35.5	(na)	(na)	(na)
	Proportion of total labor force	Percent	32.3	34.0	36.7	38.0	38.5	39.1	(na)	(na)	(na)
	Married, husband present	Percent	54.4	56.7	58.8	58.5	57.7	57.8	(na)	(na)	(na)
	Working woman, husband present, with children under 18 years	Millions	6.6	8.0	10.2	10.7	11.0	11.4	4.5	1.9	3.7
	Labor force participation rate	Percent	27.6	32.2	39.7	41.7	43.1	44.9	(na)	(na)	(na)
	Output per man-hour, private economy, index	1967 = 100	79	95	104	114	111	112	2.8	1.6	1.3
	Manufacturing	1967 = 100	79	98	105	118	113	112	2.9	2.0	−0.8
	Compensation per man-hour, private economy, index	1967 = 100	72	89	124	151	166	181	5.6	7.6	9.1
	Manufacturing	1967 = 100	77	91	122	147	161	176	4.7	7.3	10.4
	Average weekly earnings (current dollars)	Dollars	81	95	119	145	154	164	3.9	6.7	6.5
	Manufacturing	Dollars	90	108	134	166	176	190	4.1	7.1	8.0
	Contract construction	Dollars	113	138	195	236	249	265	5.6	8.3	6.4
	Retail trade	Dollars	58	67	82	98	101	108	3.5	5.3	6.9
	Average weekly earnings (1975 dollars)	Dollars	147	182	188	176	169	164	1.2	0.4	−3.0
	Manufacturing	Dollars	163	184	185	201	193	190	1.3	1.1	−1.5
	Contract construction	Dollars	206	236	271	285	272	265	2.8	0.1	−2.6
	Retail trade	Dollars	105	114	114	116	110	108	0.8	−0.9	−1.8
	Labor union membership	Millions	18.1	[24]18.5	20.8	(na)	21.6	(na)	1.4	1.1	(na)
	Percent of nonfarm employment	Percent	31.4	28.4	27.5	(na)	25.8	(na)	(na)	(na)	(na)
	Work stoppages	1,000	3.3	4.0	5.7	5.4	6.1	(na)	5.5	1.5	(na)
	Workers involved	Millions	1.3	1.6	3.3	2.3	2.8	(na)	9.6	−4.2	(na)
	INCOME AND PRICES										
	Gross national product, current dollars	Bil. dol.	506	688	982	1,397	1,413	1,516	6.9	9.5	7.3
	Per capita	Dollars	2,801	3,541	4,795	6,209	6,640	7,016	5.5	8.5	5.7
	Personal consumption expenditures	Bil. dol.	325	430	619	810	888	973	6.7	9.4	9.7
	Gross private domestic investment	Bil. dol.	76	112	141	220	215	184	6.3	11.2	−14.6
	Net exports of goods and services	Bil. dol.	4	8	4	7	8	21	(na)	(na)	(na)
	Govt. purchases of goods and services	Bil. dol.	100	138	219	270	303	339	8.1	8.5	11.8

See notes on page 16.

TABLE 6-1
RECENT TRENDS IN SOCIO-ECOLOGICAL ATTRIBUTES (CONTINUED)

Reference table	Subject	Unit of measure	1960	1965	1970	1973	1974	1975	Percent change, average per year: 1960–70	1970–74[1]	1974–75
	INCOME AND PRICES—Con.										
	Gross national product, 1972 dollars	Bil. dol.	737	926	1,075	1,235	1,214	1,192	3.9	3.1	−1.8
	Per capita	Dollars	4,078	4,765	5,248	5,862	5,714	5,552	2.6	2.1	−2.8
	National income	Bil. dol.	412	566	798	1,065	1,136	1,208	6.6	9.2	6.3
	Personal income	Bil. dol.	400	537	801	1,052	1,153	1,250	7.2	9.5	8.4
	Disposable personal income	Bil. dol.	349	472	688	902	983	1,081	7.0	9.4	10.0
	Per capita, current dollars	Dollars	1,934	2,430	3,348	4,292	4,642	5,040	5.6	8.5	8.6
	Personal saving	Bil. dol.	17	30	51	70	72	84	11.5	9.3	16.3
	Median money income of all families, current dollars	$1,000	5.6	7.0	9.9	12.1	[2]12.9	[2]13.7	5.8	6.9	6.3
	White families	$1,000	5.8	7.3	10.2	12.6	[2]13.4	[2]14.3	5.8	7.0	6.4
	Black and other families	$1,000	3.2	4.0	6.5	7.6	[2]8.6	[2]9.3	7.3	7.1	8.7
	Median money income of all families, 1975 dollars	$1,000	10.2	11.9	13.7	14.6	[2]14.1	[2]13.7	3.0	0.7	−2.6
	Median money income of persons:										
	Male	$1,000	4.1	5.0	6.7	8.1	[2]8.5	[2]8.9	5.0	8.1	4.7
	Female	$1,000	1.3	1.5	2.2	2.8	[2]3.1	[2]3.4	5.9	8.3	9.8
	Families below poverty level	Millions	8.2	8.7	5.3	4.8	[2]4.9	[2]5.5	−4.3	−1.5	12.2
	Percent of all families	Percent	18.1	13.9	10.1	8.8	[2]8.8	[2]9.7	(na)	(na)	(na)
	Persons below poverty level, total	Millions	39.9	33.2	25.4	23.0	[2]23.4	[2]25.9	−4.4	−2.0	10.7
	White	Millions	28.3	22.5	17.5	15.1	[2]15.7	[2]17.8	−4.7	−2.7	13.4
	Black and other	Millions	11.5	10.7	7.9	7.8	[2]7.8	[2]8.1	−3.7	−1.0	6.8
	Percent white of total white	Percent	17.8	13.3	9.9	8.4	[2]8.8	[2]9.7	(na)	(na)	(na)
	Percent Black of total Black	Percent	(na)	(na)	33.5	31.4	[2]30.3	[2]31.3	(na)	(na)	(na)
	Persons between 100% and 125% of poverty level:										
	Number	Millions	14.8	13.0	10.2	9.9	10.4	(na)	−3.7	0.5	0.5
	Percent of total population	Percent	8.3	6.8	5.0	4.7	4.9	(na)	(na)	(na)	(na)
	Purchasing power of the dollar:										
	Wholesale prices (1967=$1.00)	Dollars	1.05	1.04	.91	.74	.63	.57	−1.5	−8.9	−8.5
	Consumer prices (1967=$1.00)	Dollars	1.13	1.06	.88	.75	.68	.62	−2.7	−6.8	−8.4
	Wholesale price index, all commodities	1967 = 100	94.9	96.6	110.4	134.7	160.1	174.9	1.5	9.7	9.2
	Industrial commodities	1967 = 100	95.3	96.4	110.0	125.9	153.8	171.5	1.4	8.7	11.5
	Farm products and food	1967 = 100	93.7	97.1	111.7	159.1	177.4	184.2	1.8	12.3	3.8
	Fuels, related products, and power	1967 = 100	96.1	95.5	106.2	134.3	208.3	255.1	1.0	18.3	17.7
	Consumer price index, all items	1967 = 100	88.7	94.5	116.3	133.1	147.7	161.2	2.7	6.2	9.1
	Food	1967 = 100	88.0	94.4	114.9	141.4	161.7	175.4	2.7	8.9	8.5
	Rent	1967 = 100	91.7	96.9	110.1	124.3	130.6	137.3	1.8	4.4	5.1
	Fuel and utilities	1967 = 100	95.9	98.3	107.6	126.9	150.2	167.8	1.2	8.7	11.7
	Transportation	1967 = 100	89.6	95.9	112.7	123.8	137.7	150.6	2.3	5.1	9.4
	Medical care	1967 = 100	79.1	88.5	120.6	137.7	150.5	168.6	4.3	5.7	12.0
	All services	1967 = 100	83.5	92.2	121.6	139.1	152.1	166.6	3.8	5.8	9.5
	Average retail prices:										
	Bread, white, per lb	Cents	20.3	20.9	24.3	27.6	34.5	36.0	1.8	9.2	4.3
	Hamburger, per lb	Cents	52.4	50.8	66.2	95.7	97.2	87.8	2.4	10.1	−9.7
	Steak, sirloin, per lb	Cents	109	114	135	175	180	199	2.2	7.5	10.4
	Milk, fresh (grocery, 1/2 gal.)	Cents	(na)	47.3	57.4	65.4	78.4	78.5	[3]3.9	8.1	0.1
	Potatoes, per lb	Cents	7.2	9.4	9.0	13.7	16.6	13.4	2.3	16.5	−18.3
	BANKING AND FINANCE										
	Number of banks	1,000	14.0	14.3	14.2	14.7	15.0	15.1	0.1	1.3	1.1
	Number of branches	1,000	11.1	16.6	23.0	28.2	30.3	32.1	7.5	7.2	5.8
	Commercial banks, total assets	Bil. dol.	261	383	582	843	928	975	8.4	12.4	5.1
	Loans and securities	Bil. dol.	203	312	465	689	750	783	8.7	12.7	4.3
	Commercial and industrial loans	Bil. dol.	43	72	113	161	189	181	10.1	13.6	−4.0
	Investment securities	Bil. dol.	82	105	143	181	188	226	5.7	7.1	20.0
	Commercial banks, deposits	Bil. dol.	231	334	486	688	754	793	7.7	11.6	5.2
	Savings and loan associations:										
	Total assets	Bil. dol.	72	130	176	272	296	338	9.4	13.8	14.5
	Mortgage loans outstanding	Bil. dol.	60	110	150	232	249	279	9.6	13.5	11.8
	Savings capital	Bil. dol.	62	110	146	227	243	286	9.0	13.5	17.7
	Mortgage loans made	Bil. dol.	14	24	21	48	39	55	4.1	16.1	41.4
	Mortgage debt outstanding	Bil. dol.	207	325	452	635	689	741	8.1	11.1	7.5
	Residential nonfarm	Percent	78.7	78.7	74.8	74.3	73.0	74.0	(na)	(na)	(na)
	Net public and private debt	Bil. dol.	874	1,245	1,870	2,532	2,769	2,997	7.9	10.3	8.2
	Public debt	Bil. dol.	308	374	485	598	644	741	4.6	7.3	15.1
	Private debt	Bil. dol.	566	871	1,385	1,934	2,125	2,256	9.4	11.3	6.2

See notes on page 16.

TABLE 6-1
RECENT TRENDS IN SOCIO-ECOLOGICAL ATTRIBUTES (CONTINUED)

Reference table	Subject	Unit of measure	1960	1965	1970	1973	1974	1975	Percent change, average per year: 1960–70	1970–74[1]	1974–75
	BANKING AND FINANCE—Con.										
	Private liquid assets held by the public	Bil. dol.	388	563	785	1,092	1,183	1,300	7.3	10.8	9.9
	Demand deposits and currency	Bil. dol.	133	156	200	243	250	263	4.2	5.7	5.2
	Time deposits	Bil. dol.	171	295	432	643	691	789	9.7	12.5	14.2
	U.S. savings bonds and short-term securities	Bil. dol.	80	89	106	110	121	135	2.8	3.8	11.6
	Money market rates per year:										
	Federal Reserve discount rate (high)	Rate	4.00	4.50	6.00	7.50	8.00	7.25	(na)	(na)	(na)
	Prime commercial paper (4-6 mo.)	Rate	3.9	4.4	7.7	8.2	9.3	6.3	(na)	(na)	(na)
	Home mortgages, conventional, new	Rate	[2]6.0	5.8	8.5	8.3	9.2	9.1	(na)	(na)	(na)
	Corporate bonds, Aaa	Rate	4.4	4.5	8.0	7.4	8.6	8.8	(na)	(na)	(na)
	Short-term bank business loans	Rate	5.2	5.1	8.5	8.3	11.3	8.7	(na)	(na)	(na)
	Consumer credit outstanding	Bil. dol.	56	90	127	181	162	197	8.5	10.8	2.7
	Installment	Percent	78.6	78.9	80.3	82.0	82.6	82.3	(na)	(na)	(na)
	N.Y. Stock Exch. common stock index, monthly avg. (Dec. 31, 1965 = 50)	Dol. per share	30	47	46	57	44	46	4.3	−1.0	4.3
	Dow-Jones industrial (30 stocks) mo. avg	Dol. per share	618	911	753	924	756	803	2.0	−5.2	5.8
	Sales of stocks and bonds	Bil. dol.	47	93	136	187	125	167	11.2	−2.1	33.6
	Stocks	Bil. dol.	45	89	131	179	118	157	11.3	−2.6	33.1
	Bonds	Bil. dol.	2	4	5	8	6	9	11.5	7.9	44.7
	Mutual funds	Number	161	170	356	421	431	423	8.3	4.9	−1.9
	Assets	Bil. dol.	17.0	35.2	47.6	53.2	48.3	41.7	10.8	−4.1	3.5
	Sales	Bil. dol.	.5	1.2	1.2	4.4	5.6	10.1	9.8	45.8	81.0
	Life insurance:										
	Value of policies in force	Bil. dol.	586	901	1,402	1,778	1,985	2,140	9.1	9.1	7.8
	Saves	Bil. dol.	78	150	214	247	319	320	10.6	10.5	8.2
	Income	Bil. dol.	23	33	49	65	70	78	7.9	9.3	11.4
	Payments to policy holders	Bil. dol.	11	17	26	32	35	39	8.4	7.9	11.0
	Life insurance companies, assets	Bil. dol.	120	158	207	252	263	289	5.7	6.2	9.9
	Net interest earned on assets	Rate	4.1	4.8	5.3	5.9	6.3	6.4	(na)	(na)	(na)
	Health insurance: Premiums written	Bil. dol.	4.7	7.4	11.5	16.6	18.5	(na)	9.5	12.4	(na)
	Benefit payments	Bil. dol.	3.0	5.1	8.1	11.9	13.6	(na)	11.6	10.7	(na)
	BUSINESS ENTERPRISE										
	Proprietorships and partnerships:										
	Number	Millions	10.0	10.0	10.3	11.7	(na)	(na)	0.3	4.2	(na)
	Receipts	Bil. dol.	245	274	331	435	(na)	(na)	3.1	9.5	(na)
	Corporations, number	Millions	1.1	1.4	1.7	1.9	(na)	(na)	3.9	4.6	(na)
	Receipts	Tril. dol.	.8	1.2	1.8	2.6	(na)	(na)	7.5	13.5	(na)
	New business incorporations	1,000	183	204	264	329	319	320	3.7	4.8	2.8
	Business expenditures for new plant and equipment	Bil. dol.	36.8	54.4	79.7	99.7	112.4	112.8	8.1	9.0	0.3
	Manufacturing	Bil. dol.	15.1	23.4	32.0	38.0	46.0	48.0	7.8	9.5	4.2
	Public utilities	Bil. dol.	5.2	6.1	12.1	18.7	20.6	20.1	9.6	11.8	−2.0
	Communications	Bil. dol.	3.2	5.3	10.1	12.9	14.0	12.7	12.0	8.4	−9.7
	Active corporations, number	1,000	1,141	1,424	1,826	1,905	(na)	(na)	3.9	4.6	(na)
	With assets of $100 million or more	1,000	1.4	1.9	2.6	3.5	(na)	(na)	6.4	10.4	(na)
	Percent of total	Percent	0.1	0.1	0.2	0.2	(na)	(na)	(na)	(na)	(na)
	Active corporations, assets	Bil. dol.	1,207	1,724	2,635	3,848	(na)	(na)	8.1	11.5	(na)
	With assets of $100 million or more	Bil. dol.	671	1,027	1,752	2,565	(na)	(na)	10.1	13.5	(na)
	Percent of total	Percent	55.8	59.6	66.5	70.3	(na)	(na)	(na)	(na)	(na)
	Share of assets held by 200 largest manufacturing corporations	Percent	58.3	58.7	60.4	58.9	56.7	(na)	(na)	(na)	(na)
	Corporate profits after taxes	Bil. dol.	25.8	44.3	37.0	68.8	79.5	72.5	3.7	21.1	−8.8
	Capital consumption allowances	Bil. dol.	25.3	37.4	56.6	73.5	79.7	87.8	8.4	8.9	10.2
	Profit rates after taxes on stockholders' equity in manufacturing corporations	Rate	9.2	13.0	9.3	12.8	14.9	11.6	(na)	(na)	(na)
	Mergers of mfg. and mining concerns	1,000	.8	1.0	1.4	.9	.6	(na)	4.8	−18.3	(na)
	Industrial and commercial failures	1,000	15.4	13.5	10.7	9.3	9.9	11.4	−3.6	−2.0	15.3
	Per 10,000 concerns in business	Rate	57	53	44	36	38	43	−2.6	−3.6	13.2
	Current liabilities	Bil. dol.	.9	1.3	1.9	2.3	3.1	4.4	7.2	12.8	43.5
	COMMUNICATIONS										
	Postal service revenues	Bil. dol.	3.3	4.5	7.7	9.0	10.9	11.6	8.9	9.0	6.7
	Surplus (+) or deficit (−)	Mil. dol.	−597	−783	−165	−13	−438	−988	(ns)	(ns)	(ns)
	Pieces of domestic mail	Billions	63.1	71.3	84.0	88.8	85.2	83.3	2.9	1.5	−1.0
	Per capita	Number	352	369	411	423	424	415	1.6	0.8	−2.1

See notes on page 16.

TABLE 6-1
RECENT TRENDS IN SOCIO-ECOLOGICAL ATTRIBUTES (CONTINUED)

Reference table	Subject	Unit of measure	1960	1965	1970	1973	1974	1975	Percent change, average per year 1960–75	1970–74[1]	1974–75
	COMMUNICATIONS—Con.										
	Telephone systems, operating revenues	Bil. dol.	8.4	11.8	18.2	25.5	28.3	(na)	8.1	11.7	(na)
	Net income	Bil. dol.	1.3	1.8	2.3	3.2	3.5	(na)	4.1	11.4	(na)
	Bell system, operating revenues	Bil. dol.	8.1	11.3	17.4	24.1	26.6	29.6	7.9	11.4	10.8
	Net income	Bil. dol.	1.3	1.8	2.3	3.1	3.3	3.3	6.1	9.5	−0.4
	Households with telephones	Percent	79	85	91	94	94	95	(na)	(na)	(na)
	Commercial broadcast stations, total	Number	4,218	4,867	5,584	5,936	6,130	(na)	2.8	2.4	(na)
	Commercial broadcast revenues, total	Bil. dol.	1.9	2.8	3.9	5.0	5.4	(na)	7.0	8.1	(na)
	Households with TV sets	Percent	88	92	96	96	97	(na)	(na)	(na)	(na)
	Daily newspapers	Number	1,763	1,751	1,748	1,774	1,768	1,756	−0.1	0.3	−0.7
	Net paid circulation	Millions	58.9	60.4	62.1	63.1	61.9	60.7	0.5	−0.1	−2.0
	ENERGY AND SCIENCE										
	Horsepower of all prime movers	Billions	11	15	20	24	25	25	6.4	4.7	2.4
	Production of energy (Btu)	Quadril.	41.6	49.1	62.5	62.4	61.3	60.1	4.2	−0.5	−1.9
	Consumption of energy (Btu)	Quadril.	44.6	53.3	[illegible]	74.8	72.9	71.1	4.2	2.1	−2.5
	Per capita (Btu)	Millions	247	274	[illegible]	[illegible]	344	333	2.0	1.2	−3.2
	By source: Coal	Percent	23	22	19	19	18	19	(na)	(na)	(na)
	Natural gas	Percent	32	34	[illegible]	[illegible]	33	32	(na)	(na)	(na)
	Crude petroleum	Percent	42	40	[illegible]	[illegible]	42	43	(na)	(na)	(na)
	Industrial	Percent	33	32	[illegible]	29	28	27	(na)	(na)	(na)
	Household and commercial	Percent	23	22	[illegible]	19	19	19	(na)	(na)	(na)
	Crude oil imports	Mil. bbl.	372	452	487	1,184	1,268	1,498	2.6	27.3	18.0
	Petroleum products imports	Mil. bbl.	293	449	779	1,099	962	781	10.1	5.9	−27.1
	Petroleum products exports	Mil. bbl	71	67	90	84	79	74	2.4	−3.2	−6.3
	Electric energy production (kWh)	Billions	842	1,158	1,602	1,965	1,969	2,000	6.6	5.3	1.6
	Installed capacity	Mil. kW	186	255	361	480	495	525	6.9	8.2	6.1
	Per kW of installed capacity	kWh	4,529	4,548	4,438	4,272	3,978	3,810	−0.2	−2.7	−4.2
	Electric utilities operating revenues	Bil. dol.	10	13	20	29	37	(na)	6.9	17.1	(na)
	Net income	Bil. dol.	1.8	2.6	3.4	5.0	5.3	(na)	6.7	11.7	(na)
	Gas utility and pipeline industry revenues	Bil. dol.	8.7	11.5	16.4	20.6	24.2	30.6	8.5	10.2	26.3
	Net income	Bil. dol.	.8	1.1	1.4	2.0	2.3	2.5	5.6	12.7	8.6
	Nuclear capacity, year-end (net MW)	1,000	.4	1.0	7.5	20.1	30.4	39.6	34.7	41.9	30.1
	Percent of total electric utility capacity	Percent	0.2	0.4	2.2	4.8	6.4	8.3	(na)	(na)	(na)
	Scientists and engineers employed[26]	1,000	[2]428	494	550	523	528	531	[3]2.9	−1.0	0.5
	Industry[27]	1,000	[2]312	348	375	359	360	358	[3]2.1	−1.1	−0.4
	Science doctorates conferred	1,000	6.3	10.5	17.8	18.9	18.3	18.4	11.0	0.8	0.2
	Federal space program outlays	Bil. dol.	.9	6.9	5.5	4.7	4.5	4.9	19.9	−2.9	0.8
	NASA outlays	Bil. dol.	.3	5.0	3.6	3.1	3.3	3.0	26.9	−4.5	−0.2
	Research and development (R&D) funds	Bil. dol.	13.6	20.1	26.0	30.4	32.3	35.2	6.8	5.5	8.9
	Basic research funds	Percent	8.7	12.8	13.5	12.5	12.6	12.6	(na)	(na)	(na)
	Federal Government funds	Percent	64.6	64.9	56.7	54.0	52.3	52.8	(na)	(na)	(na)
	Industry funds	Percent	33.3	32.5	40.1	42.4	44.1	43.6	(na)	(na)	(na)
	Defense-related outlays	Percent	52.2	32.9	32.8	32.0	27.1	26.3	(na)	(na)	(na)
	Space-related outlays	Percent	3.2	20.7	10.3	6.7	9.0	8.5	(na)	(na)	(na)
	Federal obligations for R&D	Bil. dol.	7.6	14.6	15.3	16.8	17.4	19.0	7.3	3.3	9.2
	TRANSPORTATION										
	Intercity freight traffic, ton-miles	Billions	1,330	1,651	1,936	2,232	2,213	(na)	3.8	3.4	(na)
	Moved by railroad	Percent	44.7	43.7	39.8	38.5	38.9	(na)	(na)	(na)	(na)
	Intercity passenger traffic, passenger-miles	Billions	784	920	1,165	1,357	(na)	(na)	4.2	4.6	(na)
	Moved by private automobile	Percent	90.1	88.9	86.6	86.5	(na)	(na)	(na)	(na)	(na)
	Total highway mileage	Billions	3.5	3.7	3.7	3.8	3.8	(na)	0.5	0.6	(na)
	State and local highway long-term debt outstanding	Bil. dol.	13.2	15.3	19.1	22.9	23.1	23.6	3.8	4.8	2.2
	Motor vehicle travel, vehicle-miles	Billions	719	888	1,121	1,309	1,290	(na)	4.5	3.6	(na)
	Motor vehicle registrations	Millions	74	90	108	126	130	134	3.9	4.8	3.0
	New passenger car sales	Millions	6.6	9.9	8.6	12.2	9.4	9.1	2.7	2.2	−3.2
	Domestic production	Millions	6.1	9.3	6.5	9.7	7.3	6.7	0.6	2.9	−8.2
	Imports	Millions	.4	.6	2.0	2.5	2.1	2.4	17.5	1.2	14.3
	Percent of total	Percent	6	6	24	21	23	26	(na)	(na)	(na)
	Motor fuel consumption	Bil. gal.	64	71	92	110	106	(na)	3.8	3.6	(na)
	Revenue passengers carried, local transit companies	Billions	7.5	6.8	5.9	5.3	5.6	5.6	−2.3	−1.4	0.2
	Deaths, motor vehicle accidents	1,000	38	49	55	56	46	46	3.7	−4.1	−1.3

See notes on page 16.

TABLE 6-1
RECENT TRENDS IN SOCIO-ECOLOGICAL ATTRIBUTES (CONTINUED)

Reference table	Subject	Unit of measure	1960	1965	1970	1973	1974	1975	Percent change, average per year: 1960–70	1970–74[1]	1974–75
	TRANSPORTATION—Con.										
	Operating revenues:										
	Motor carriers of property	Bil. dol.	7.2	10.1	14.6	20.8	22.7	(na)	7.3	11.7	(na)
	Railroads	Bil. dol.	10.0	10.7	12.5	15.6	17.8	(na)	2.3	9.2	(na)
	Railroad freight revenue-tons originated	Billions	1.3	1.5	1.6	1.6	1.6	(na)	1.9	0.7	(na)
	Railroad passenger-miles	Billions	21.3	17.5	10.8	9.3	10.3	(na)	-6.6	-1.0	(na)
	Railroad operating revenues (Class I)	Bil. dol.	9.5	10.2	12.0	15.0	17.2	18.7	2.3	9.5	-3.8
	Net operating income	Mil. dol.	594	962	486	698	514	22	-1.8	1.4	-95.7
	Scheduled air carriers, domestic revenue	Bil. dol.	2.1	3.6	7.1	9.6	11.4	11.9	12.8	12.6	4.2
	Revenue passengers carried	Millions	56	82	153	183	190	188	10.6	5.6	-0.5
	Express and freight ton-miles flown	Billions	.4	.9	2.0	2.5	2.4	2.3	17.6	5.3	-3.7
	Waterborne commerce, total cargo, short tons	Billions	1.1	1.3	1.5	1.8	1.7	(na)	3.4	3.3	(na)
	AGRICULTURE, FORESTRY, FISHERIES										
	Farm population	Millions	15.6	12.4	9.7	9.5	9.3	8.9	-4.6	-1.2	-4.3
	Farms	Millions	4.0	3.4	3.0	2.8	2.8	2.8	-2.9	-1.1	-0.8
	Average land per farm	Acres	297	340	373	383	384	387	2.3	3.7	0.8
	Farm employment[39]	Millions	7.1	5.6	4.5	4.3	4.4	4.4	-4.4	-0.7	-0.7
	Agricultural assets, total	Bil. dol.	204	238	306	386	476	520	4.2	11.7	9.2
	Farm income, gross	Bil. dol.	38	46	59	96	109	98	4.3	14.4	-2.8
	Cash marketing receipts	Percent	89.0	86.5	86.3	91.2	92.5	91.2	(na)	(na)	(na)
	Government payments	Percent	1.6	5.4	6.3	2.7	0.5	0.8	(na)	(na)	(na)
	Average income per farm	$1,000	2.9	3.8	4.8	11.7	8.4	8.1	5.1	18.3	-2.9
	Personal income, farm population	Bil. dol.	18.4	22.6	27.4	48.6	45.1	45.5	4.1	13.3	0.8
	Per capita	Dollars	1,174	1,825	2,819	5,128	4,866	5,129	9.2	14.6	5.4
	Value of farm products:										
	Current dollars	Bil. dol.	38	44	55	96	99	102	3.7	15.9	2.6
	Constant (1972) dollars	Bil. dol.	52	57	63	89	85	88	1.9	8.9	4.1
	Farm output index	1967 = 100	91	98	101	112	108	111	1.0	1.7	2.8
	Farm output per man-hour, index	1967 = 100	85	85	112	133	132	141	5.6	4.2	6.8
	Livestock and products	1967 = 100	92	88	121	144	138	140	6.9	6.6	2.6
	Crops	1967 = 100	88	90	110	128	118	131	5.2	1.8	11.9
	Agricultural exports	Bil. dol.	4.5	6.1	6.7	12.9	21.3	21.6	4.0	33.4	1.4
	Percent of all exports	Percent	24	23	16	22	25	21	(na)	(na)	(na)
	Harvested crops, total	Mil. acres	324	298	293	321	330	336	-1.0	3.0	1.8
	Wheat production	Mil. bu.	1,355	1,316	1,352	1,706	1,796	2,134	(--)	7.4	18.8
	Corn for grain, production	Mil. bu.	3,907	4,102	4,152	5,647	4,664	5,767	0.6	2.9	23.6
	Wheat exports	Mil. bu.	661	867	732	1,372	923	1,128	1.0	5.0	22.3
	Corn for grain, exports	Mil. bu.	292	687	506	1,306	1,175	1,318	5.7	23.4	12.2
	Lumber production, board feet	Billions	33	37	35	39	35	(na)	0.5	(--)	(na)
	Pulpwood production, total, cords	Millions	40	52	68	73	(na)	(na)	5.4	2.6	(na)
	Woodpulp production, total, short tons	Millions	25	34	44	48	48	41	5.6	2.7	-16.1
	Fisheries, catch	Bil. lb.	4.9	4.8	4.9	4.9	4.9	4.8	-0.1	0.1	-2.8
	Value	Mil. dol.	354	446	613	937	898	971	5.6	10.0	8.1
	Canned fishery products, value	Mil. dol.	388	495	742	1,167	1,306	1,035	6.7	15.2	-20.8
	Imports of fishery products, value[39]	Mil. dol.	363	601	1,037	1,583	1,711	1,637	11.1	13.3	-4.3
	MINERAL PRODUCTION										
	Mineral production:										
	Current dollars	Bil. dol.	18	22	30	37	55	(na)	5.2	16.7	(na)
	Fuels	Bil. dol.	12	14	20	25	41	(na)	5.3	19.3	(na)
	Nonmetals	Bil. dol.	4	5	6	7	9	(na)	3.9	11.2	(na)
	Metals	Bil. dol.	2	3	4	4	6	(na)	8.0	9.5	(na)
	Constant (1967) dollars	Bil. dol.	19	22	27	27	26	(na)	3.8	-0.4	(na)
	Mineral imports	Bil. dol.	3	3	3	7	19	(na)	0.3	54.6	(na)
	Mineral exports	Bil. dol.	2	1	2	2	4	(na)	-1.7	21.6	(na)
	Mining production, index	1967 = 100	83	94	110	110	109	107	2.9	-0.2	-1.8
	Coal, oil, and gas	1967 = 100	81	92	108	108	107	106	3.0	-0.5	-0.9
	U.S. direct investment abroad in mining and petroleum	Bil. dol.	14	19	25	33	36	41	6.2	9.4	15.0
	Petroleum	Bil. dol.	11	15	20	27	30	35	6.2	11.3	15.2
	Coal production, short tons	Millions	434	527	613	599	610	646	3.5	-0.1	5.9
	Value	Bil. dol.	2.1	2.4	3.9	5.1	9.6	12.3	6.3	26.5	27.6
	Average employment	1,000	109	134	140	148	167	195	-1.9	4.5	16.8
	Crude petroleum production, domestic	Bil. bbl.	2.6	2.9	3.5	3.4	3.2	3.1	3.2	-2.3	-4.6
	Value (at wells)	Bil. dol.	7.4	8.2	11.2	13.1	21.6	24.4	4.2	17.9	13.1

See notes on page 16.

TABLE 6-1
RECENT TRENDS IN SOCIO-ECOLOGICAL ATTRIBUTES (CONTINUED)

Reference table	Subject	Unit of measure	1960	1965	1970	1973	1974	1975	Percent change, average per year: 1960–70	1970–74[1]	1974–75
	MINERAL PRODUCTION—Con.										
	Crude petroleum, proved reserves	Bil. bbl.	31.8	31.4	39.0	35.3	34.3	32.7	2.1	–3.2	–4.6
	Refined petroleum products at refineries	Bil. bbl.	3.0	3.3	4.0	4.5	4.4	3.0	3.0	2.8	–31.3
	Crude petroleum production, world	Bil. bbl.	7.7	11.1	16.7	20.6	20.5	19.7	8.1	5.3	–4.2
	Natural gas, marketed production, cu. ft	Trillions	13	16	22	23	22	20	5.6	–0.4	–6.9
	Value	Bil. dol.	1.9	2.5	3.7	4.9	6.6	8.9	7.7	15.1	36.1
	Natural gas, proved reserves, cu. ft	Trillions	264	286	291	250	237	228	1.0	–5.0	–3.8
	Iron ore production, long tons	Millions	89	87	90	88	84	79	0.1	–1.5	–6.5
	Value of shipments	Mil. dol.	724	801	942	1,168	1,381	1,619	2.7	10.2	16.4
	Copper ore production, short tons	Millions	135	173	258	290	253	(na)	6.7	3.2	(na)
	CONSTRUCTION AND HOUSING										
	Value of new construction	Bil. dol.	55	74	95	138	139	132	5.7	9.9	4.7
	Private	Bil. dol.	39	52	67	106	100	93	5.6	10.7	–7.1
	Residential (including farm)	Bil. dol.	23	28	32	64	58	48	3.3	12.1	–7.7
	Public	Bil. dol.	16	22	28	33	38	39	5.9	8.1	1.7
	Value of new construction, 1967 dollars	Bil. dol.	63	80	79	93	80	70	2.3	0.4	–13.0
	Composite construction cost index	1967=100	83	93	122	152	173	190	3.9	9.1	9.6
	New one-family homes, price index	1967=100	(na)	93	117	145	158	174	[5]4.7	7.7	10.2
	Wholesale prices of construction materials	1967=100	86	96	113	139	161	174	1.7	9.4	8.1
	Union hourly wages, building trades	1967=100	75	91	129	161	173	188	5.5	7.7	8.6
	Year-round housing units	Millions	58.6	(na)	67.7	75.3	75.9	(na)	1.8	2.9	(na)
	Occupied units	Millions	53.0	(na)	63.5	69.3	70.8	(na)	1.8	2.8	(na)
	Owner-occupied	Millions	32.8	(na)	39.9	44.7	45.8	(na)	2.0	3.5	(na)
	Renter-occupied	Millions	20.2	(na)	23.6	24.7	25.0	(na)	1.5	1.5	(na)
	Vacant units	Millions	3.6	(na)	4.2	6.0	5.1	(na)	1.7	4.7	(na)
	New housing units started	Millions	1.3	1.5	1.5	2.1	1.4	1.2	1.3	–2.1	–13.4
	Structures with two or more units	Percent	22	36	45	46	34	24	(na)	(na)	(na)
	Price index, 1967=100	Index	(na)	93	117	145	158	174	(na)	7.7	10.2
	Median sale price	$1,000	(na)	20.0	23.4	32.5	35.9	39.3	(na)	11.3	9.5
	Rental vacancy rate	Percent	8.1	8.3	5.3	5.8	6.2	6.0	(na)	(na)	(na)
	Low rent public housing units	1,000	593	736	1,155	1,324	1,314	1,317	6.9	3.3	0.2
	For the elderly	1,000	19	98	249	334	327	336	29.4	7.0	2.7
	Year-round housing units lacking some or all plumbing—										
	Owner-occupied units	Percent	11	(na)	5	2	2	(na)	(na)	(na)	(na)
	Renter-occupied units	Percent	21	(na)	9	6	5	(na)	(na)	(na)	(na)
	First mortgage loans, conventional type, single family homes:										
	New homes, contract interest rate	Percent	(na)	5.7	8.2	7.5	8.5	8.7	(na)	(na)	(na)
	Existing homes, contract interest rate	Percent	(na)	5.9	8.2	7.6	8.4	8.9	(na)	(na)	(na)
	MANUFACTURES										
	Industrial production, index	1967=100	66	89	107	126	125	114	5.0	4.0	–8.8
	Manufacturing	1967=100	65	89	105	125	124	112	4.9	4.2	–9.7
	Manufacturing: Relation of output to capacity	Percent	80	89	78	83	79	68	(na)	(na)	(na)
	Value added by manufacture	Bil. dol.	184	225	300	404	(na)	(na)	6.2	10.4	(na)
	Employment in manufactures, annual average	Millions	17	18	19	20	(na)	(na)	1.3	1.2	(na)
	Manufacturers' shipments	Bil. dol.	370	482	634	858	983	994	5.5	11.8	1.1
	Manufacturers' inventories	Bil. dol.	54	68	101	121	150	147	6.6	10.4	–2.5
	Manufacturers' new orders	Bil. dol.	381	502	625	869	1,003	977	5.6	12.5	–2.6
	Capital expenditures	Bil. dol.	18	17	22	27	(na)	(na)	8.2	6.8	(na)
	Raw steel production, short tons	Millions	99	131	132	151	148	117	2.9	2.6	–20.8
	Steel mill products, net shipments, short tons	Millions	71	93	91	111	109	80	2.5	4.8	–27.0
	DOMESTIC TRADE AND SERVICES										
	Retail store sales, all stores	Bil. dol.	220	294	378	503	538	584	5.5	9.4	8.6
	Constant (1967) dollars	Bil. dol.	239	296	337	402	382	(na)	3.5	3.2	(na)
	Multiunit firms[10]	Bil. dol.	(na)	73	117	155	169	183	[5]8.9	9.6	8.1
	Department store sales	Bil. dol.	[11]14	23	37	52	56	61	[11]10.4	10.6	8.7
	Retail trade inventories	Bil. dol.	27	34	47	65	74	73	5.7	12.0	–1.4
	Inventory-sales ratio	Ratio	1.5	1.4	1.5	1.5	1.5	1.5	(na)	(na)	(na)

See notes on page 16.

TABLE 6-1
RECENT TRENDS IN SOCIO-ECOLOGICAL ATTRIBUTES (CONTINUED)

Reference table	Subject	Unit of measure	1960	1965	1970	1973	1974	1975	Percent change, average per year: 1960–70	1970–74[1]	1974–75
	DOMESTIC TRADE AND SERVICES -Con.										
	Merchant wholesaler sales	Bil. dol.	140	187	247	365	448	439	5.8	16.1	−2.0
	Inventories	Bil. dol.	14	18	27	38	47	45	6.8	14.3	−3.1
	Inventory-sales ratio	Percent	122	113	130	113	124	121	(ns)	(ns)	(ns)
	Advertising expenditures	Bil. dol.	12	15	20	25	27	28	5.0	8.2	5.8
	National	Percent	61	61	58	55	55	54	(ns)	(ns)	(ns)
	Local	Percent	39	39	42	45	45	46	(ns)	(ns)	(ns)
	FOREIGN COMMERCE										
	Balance on current account	Bil. dol.	1.7	4.3	−.4	(z)	−3.6	11.7	(ns)	(ns)	(ns)
	Exports of goods and services	Bil. dol.	28	40	62	102	145	148	8.5	23.4	2.5
	Imports of goods and services	Bil. dol.	24	32	60	98	141	132	9.7	24.1	−6.4
	U.S. net international investment position	Bil. dol.	44.7	61.6	67.8	61.9	77.6	(na)	4.3	3.4	(na)
	U.S. assets and investments abroad	Bil. dol.	86	120	165	225	265	(na)	6.8	12.5	(na)
	Foreign assets and investments in U.S.	Bil. dol.	41	59	98	164	187	(na)	9.1	17.6	(na)
	U.S. reserve assets	Bil. dol.	19.4	15.5	14.5	14.4	15.9	16.2	−2.9	2.3	2.2
	Gold stock, U.S.	Bil. dol.	18	14	11	12	12	12	−4.6	1.3	−0.5
	U.S. foreign grants and credits	Bil. dol.	4.6	5.0	5.9	6.8	7.3	8.7	2.5	5.6	18.7
	Military grants	Bil. dol.	1.8	1.7	2.7	2.9	2.8	2.9	4.3	0.8	2.6
	Other grants, credits, and other aid	Bil. dol.	2.6	3.4	2.9	3.6	3.9	5.1	1.0	7.9	29.9
	Exports of merchandise	Bil. dol.	20.6	27.5	43.2	71.3	98.5	107.7	7.7	22.9	9.3
	To developed countries	Percent	64.4	66.7	69.1	66.2	64.0	60.2	(ns)	(ns)	(ns)
	To developing countries	Percent	34.7	32.8	30.1	29.4	33.2	36.5	(ns)	(ns)	(ns)
	General imports of merchandise	Bil. dol.	14.7	21.4	40.0	69.5	101.0	96.9	10.6	26.1	−4.0
	From developed countries	Percent	58.7	65.8	73.2	69.9	59.9	57.5	(ns)	(ns)	(ns)
	From developing countries	Percent	40.7	33.5	26.1	29.2	39.1	40.6	(ns)	(ns)	(ns)
	Merchandise trade balance	Bil. dol.	5.0	5.3	2.7	1.3	−3.1	10.3	(ns)	(ns)	(ns)

Note: Average annual percent changes were computed using the compound interest rate formula. Whenever possible, absolute values or values with less rounding than appear here were used in the computations.

Symbols: – Represents zero. na Not available. ns Percent change not relevant or significant. x Not applicable.
z Less than 0.05 percent or $50 million.

[1] Where na occurs in 1974 column, percent change calculated refers to 1970-1973 period.
[2] These data are as of different dates in the years shown. See reference tables for further information.
[3] Data not strictly comparable year to year because of changes in definition.
[4] Based on 286 standard metropolitan statistical areas (SMSA's).
[5] For 1960, 14 years old and over.
[6] Excludes Armed Forces living in barracks in U.S.
[7] Will not add to total families; estimates derived using different controls.
[8] 1965-1970.
[9] Average daily census per 100 beds.
[10] Average patient stay of 30 days or less.
[11] 1969 data. Percent changes are calculated as 1960-1969 and 1969-1974.
[12] Decline in water use in 1975 reflects the increasing use of recycled water.
[13] Particles of smoke, dust, fumes, droplets of viscous liquid, etc.
[14] Comprises employment taxes and contributions, unemployment insurance taxes, and other contributions.
[15] Excludes utilities, insurance trusts, and government liquor stores.
[16] Old-age, survivors, disability, and health insurance.
[17] Excludes care covered by social welfare programs; e.g. medical assistance under public aid, Medicare under social insurance, etc.
[18] 1967 data. Percent change is calculated 1967-1970.
[19] Federally-administered. Program initiated January 1, 1974.
[20] Beginning 1974, replaced by federally-financed Supplemental Security Income.
[21] 1961 data. Percent change is 1961-1970.
[22] Includes Armed Forces.
[23] Includes deceased veterans whose dependents were receiving pensions and compensation benefits.
[24] 1966 data.
[25] Not strictly comparable with earlier years due to revised procedures.
[26] Full-time equivalent employees; excludes State and local government agencies.
[27] Excludes social scientists.
[28] Includes farm operators doing one or more hours of farm work and unpaid family members doing 15 or more hours of farm work in survey week.
[29] Includes Puerto Rico.
[30] Firms with 11 or more stores.
[31] Not strictly comparable with later years.

Source: Statistical Abstract of the United States, 1976

TABLE 6-2
APPROXIMATE AVERAGE ANNUAL PERCENTAGE CHANGES
REQUIRED TO PRODUCE MULTIPLES
OF INITIAL VALUES

Years Involved	Percentage Change Average Per Year to: Double Initial Value	Triple Initial Value	Reduce to 1/2 of Initial Value	Reduce to 1/3 of Initial Value
1	200.00	300.00	-50.00	-66.67
2	41.42	73.21	-29.29	-42.29
3	25.99	44.22	-20.63	-30.69
4	18.92	31.61	-15.91	-24.04
5	14.87	24.57	-12.94	-19.74
6	12.25	20.08	-10.91	-16.75
7	10.41	16.99	- 9.43	-14.54
8	9.05	14.72	- 8.30	-12.84
9	8.01	12.98	- 7.41	-11.50
10	7.18	11.61	- 6.70	-10.41
11	6.50	10.50	- 6.11	- 9.51
12	5.95	9.59	- 5.61	- 8.76
13	5.48	8.82	- 5.19	- 8.11
14	5.08	8.16	- 4.83	- 7.55
15	4.73	7.60	- 4.52	- 7.07
16	4.43	7.11	- 4.24	- 6.64
17	4.16	6.68	- 4.00	- 6.26
18	3.93	6.29	- 3.78	- 5.93
19	3.71	5.95	- 3.58	- 5.62
20	3.53	5.65	- 3.41	- 5.35
21	3.36	5.37	- 3.25	- 5.10
22	3.20	5.12	- 3.10	- 4.88
23	3.06	4.89	- 2.97	- 4.67
24	2.93	4.68	- 2.85	- 4.48
25	2.81	4.49	- 2.73	- 4.30
30	2.34	3.73	- 2.28	- 3.60
35	2.00	3.19	- 1.96	- 3.09
40	1.75	2.78	- 1.72	- 2.71
45	1.55	2.47	- 1.53	- 2.41
50	1.40	2.22	- 1.38	- 2.18

Major Economic Indicator: Net National Product (NNP)

The major economic indicator used within this TA was the Net National Product (NNP). Variables associated with the NNP are presented in Tables 6-3 through 6-10. Many of these variables are measured both in current and in constant 1972 dollars. The exceptions to this measure are the implicit price deflators given in table 6-5 and the consumer price indexes shown in table 6-9.

Care should be taken in interpreting the meaning of the average annual percent changes within these tables. Many of the individual variables making up the NNP are investment expenditures and are thus cumulative in nature, e.g., those items within the gross domestic investment area. Other variables are consumed during the year, e.g., fuel, food, etc. The majority of the investment type expenditures are available for use during the life of the investment and contribute to what is commonly referred to as the national wealth. It was outside the scope of this paper to determine the total value of the National wealth.

TABLE 6-3
GROSS NATIONAL PRODUCT OR EXPENDITURE 1950-1975

TABLE B-1.—*Gross national product or expenditure,*

[Billions of dollars, except as noted; quarterly data at seasonally adjusted annual rates]

Year or quarter	Gross national product	Personal consumption expenditures [1]	Gross private domestic investment [2]	Net exports of goods and services			Government purchases of goods and services [3]					Percent change from preceding period, gross national product [5]
				Net exports	Exports	Imports	Total	Federal			State and local	
								Total	National defense [4]	Nondefense		
1950	286.2	192.0	53.8	1.9	13.9	12.0	38.5	18.7	14.0	4.7	19.8	10.9
1951	330.2	207.1	59.2	3.8	18.9	15.1	60.1	38.3	33.5	4.8	21.8	15.4
1952	347.2	217.1	52.1	2.4	18.2	15.8	75.6	52.4	45.8	6.5	23.2	5.1
1953	366.1	229.7	53.3	.6	17.1	16.6	82.5	57.5	48.6	8.9	25.0	5.5
1954	366.3	235.8	52.7	2.0	18.0	16.0	75.8	47.9	41.1	6.8	27.8	.0
1955	399.3	253.7	68.4	2.2	20.0	17.8	75.0	44.5	38.4	6.0	30.6	9.0
1956	420.7	266.0	71.0	4.3	23.9	19.6	79.4	45.9	40.2	5.7	33.5	5.4
1957	442.8	280.4	69.2	6.1	26.7	20.7	87.1	50.0	44.0	5.9	37.1	5.2
1958	448.9	289.5	61.9	2.5	23.3	20.8	95.0	53.9	45.6	8.3	41.1	1.4
1959	486.5	310.8	77.6	.6	23.7	23.2	97.6	53.9	45.6	8.3	43.7	8.4
1960	506.0	324.9	76.4	4.4	27.6	23.2	100.3	53.7	44.5	9.3	46.5	4.0
1961	523.3	335.0	74.3	5.4	28.9	23.1	108.2	57.4	47.0	10.4	50.8	3.4
1962	563.8	355.2	85.2	5.4	30.6	25.2	118.0	63.7	51.1	12.7	54.3	7.7
1963	594.7	374.6	90.2	6.3	32.7	26.4	123.7	64.6	50.3	14.3	59.0	5.5
1964	635.7	400.4	96.6	8.9	37.4	28.4	129.8	65.2	49.0	16.2	64.6	8.9
1965	688.1	430.2	112.0	7.6	39.5	32.0	138.4	67.3	49.4	17.8	71.1	8.2
1966	753.0	464.8	124.5	5.1	42.8	37.7	158.7	78.8	60.3	18.5	79.8	9.4
1967	796.3	490.4	120.8	4.9	45.6	40.6	180.2	90.9	71.5	19.5	89.3	5.8
1968	868.5	535.9	131.5	2.3	49.9	47.7	198.7	98.0	76.9	21.2	100.7	9.1
1969	935.5	579.7	146.2	1.8	54.7	52.9	207.9	97.5	76.3	21.2	110.4	7.7
1970	982.4	618.8	140.8	3.9	62.5	58.5	218.9	95.6	73.5	22.1	123.2	5.0
1971	1,063.4	668.2	160.0	1.6	65.6	64.0	233.7	96.2	70.2	26.0	137.5	8.2
1972	1,171.1	733.0	188.3	−3.3	72.7	75.9	253.1	102.1	73.5	28.6	151.0	10.1
1973	1,306.3	808.5	220.5	7.4	101.5	94.2	269.9	102.0	73.4	28.6	168.0	11.5
1974	1,408.9	885.9	212.2	7.7	144.2	136.5	301.1	111.7	77.4	34.3	189.4	7.7
1975 [p]	1,499.0	963.2	183.3	21.5	147.3	125.8	330.9	123.1	84.0	39.2	207.8	6.5

[1] See Table B-16 for detailed components.
[2] See Table B-9 for detailed components.
[3] Net of Government sales.
[4] This category corresponds closely to the national defense classification in "The Budget of the United States Government, Fiscal Year 1977."
[5] Changes are based on unrounded data and therefore may differ slightly from those obtained from data shown here.

Source: Department of Commerce, Bureau of Economic Analysis.

Columns 1 2 3 4 5 6 7 8 9 10 11 12

Source: Economic Report of the President, 1976.

Average Annual % Change From:

	Column 1	Column 2	Column 3	Column 4	Column 5
1950-55	6.96	5.73	4.92	2.98	7.55
1955-60	4.85	5.07	2.24	14.87	6.65
1960-65	6.24	5.78	7.95	11.55	7.43
1965-70	7.28	7.54	4.68	-12.49	9.61
1970-75	8.82	9.25	5.42	40.69	18.70
1950-75	6.86	6.66	5.03	10.19	9.90

	Column 6	Column 7	Column 8	Column 9	Column 10	Column 11
1950-55	8.21	14.27	18.93	22.36	5.01	9.10
1955-60	5.44	5.99	3.83	2.99	9.16	8.73
1960-65	6.64	6.65	4.62	2.11	13.86	8.83
1965-70	12.82	9.60	7.27	8.27	4.42	11.62
1970-75	16.55	8.62	5.19	2.71	12.14	11.02
1950-75	9.86	8.99	7.83	7.43	8.85	9.86

TABLE 6-4
GROSS NATIONAL PRODUCT OR EXPENDITURES IN 1972 DOLLARS 1950-1975

TABLE B-2.—*Gross national product or expenditure in 1972 dollars*

(Billions of 1972 dollars; quarterly data at seasonally adjusted annual rates)

Year or quarter	Gross national product	Personal consumption expenditures				Gross private domestic investment					Gross private domestic investment—continued					Net exports of goods and services			Government purchases of goods and services [1]			Percent change from preceding period, gross national product [2]
							Fixed investment				Fixed investment—continued											
								Nonresidential			Residential											
		Total	Durable goods	Nondurable goods	Services	Total	Total	Total	Structures	Producers' durable equipment	Total	Nonfarm structures	Farm structures	Producers' durable equip-	Change in business inventories	Net exports	Exports	Imports	Total	Federal	State and local	
1950	533.5	338.1	43.4	161.8	132.8	93.7	83.2	50.0	19.1	30.9	33.2	31.5	1.3	.3	10.6	4.0	21.7	17.7	97.7	47.0	50.7	8.7
1951	576.5	342.3	39.9	165.3	137.1	94.1	80.4	52.9	20.6	32.3	27.5	25.9	1.3	.3	13.7	7.4	25.9	18.5	132.7	81.3	51.3	8.1
1952	598.5	350.9	38.9	171.2	140.8	83.2	78.9	52.1	20.6	31.5	26.8	25.3	1.2	.3	4.3	4.9	24.9	20.0	159.5	107.0	52.5	3.8
1953	621.8	364.2	43.1	175.7	145.5	85.6	84.1	56.3	22.5	33.8	27.8	26.3	1.2	.3	1.5	2.0	23.8	21.8	178.0	114.6	55.4	3.9
1954	613.7	370.9	43.5	177.0	150.4	83.4	85.6	55.4	23.5	31.8	30.2	28.8	1.1	.3	−2.2	4.5	25.3	20.8	154.9	95.2	59.7	−1.3
1955	654.8	395.1	52.2	185.4	157.5	104.1	96.3	61.2	25.3	35.9	35.1	33.8	.9	.4	7.7	4.7	27.9	23.2	158.9	86.9	64.0	6.7
1956	668.8	406.3	49.8	191.6	164.9	102.9	97.1	65.2	28.1	37.1	31.9	30.4	1.0	.4	5.8	7.3	32.3	25.0	152.4	85.9	66.5	2.1
1957	680.9	414.7	49.7	194.9	170.2	97.2	95.7	66.0	28.1	37.9	29.7	28.3	1.0	.4	1.5	8.9	34.8	26.0	160.1	89.8	70.3	1.8
1958	679.5	419.0	46.4	196.8	175.8	87.7	89.6	58.9	26.4	32.5	30.6	29.2	.9	.5	−1.8	3.5	30.7	27.2	169.3	92.8	76.4	−.2
1959	720.4	441.5	51.8	205.0	184.7	107.4	101.0	62.9	26.8	36.1	38.1	36.5	1.0	.6	6.5	.9	31.5	30.6	178.7	91.8	78.9	6.0
1960	736.8	453.0	52.5	208.2	192.3	105.4	101.0	66.0	28.8	37.2	35.0	33.7	.8	.5	4.4	5.5	35.8	30.3	172.9	90.8	82.0	2.3
1961	755.3	462.2	50.3	211.9	200.0	103.6	100.7	65.6	29.3	36.3	35.1	33.6	1.0	.5	2.9	6.7	37.0	30.3	182.8	95.6	87.1	2.5
1962	799.1	482.9	55.7	218.5	208.7	117.4	109.3	70.9	30.8	40.1	38.4	36.9	.9	.6	8.1	5.8	39.6	33.9	193.1	103.1	90.0	5.8
1963	830.7	501.4	60.7	223.0	217.6	124.5	116.8	73.5	30.8	42.7	43.2	41.7	.9	.6	7.8	7.3	42.2	35.0	197.6	102.2	95.4	4.0
1964	874.4	528.7	65.7	233.3	229.7	132.1	124.8	81.0	33.3	47.7	43.8	42.2	.9	.7	7.3	10.9	47.8	36.9	202.7	100.6	102.1	5.3
1965	925.9	558.1	73.4	244.0	240.7	150.1	138.8	95.6	39.6	56.0	43.2	41.6	.8	.7	11.3	8.2	49.1	41.0	208.6	100.5	109.1	5.9
1966	981.0	586.1	79.0	255.5	251.6	161.3	144.6	106.1	42.5	63.6	38.5	36.9	.9	.8	16.7	4.3	51.6	47.3	229.3	112.5	116.8	5.9
1967	1,007.7	603.2	79.7	259.5	264.0	152.7	140.7	103.5	41.1	62.4	37.2	35.5	.9	.8	12.0	3.5	54.2	50.7	248.3	125.3	123.1	2.7
1968	1,051.8	633.4	88.2	270.2	275.0	159.5	150.8	108.0	42.0	66.1	42.8	41.1	.8	.9	8.7	−.4	58.5	58.9	259.2	128.3	130.9	4.4
1969	1,078.8	655.4	91.9	276.4	287.2	168.0	157.5	114.3	44.0	70.3	43.2	41.5	.9	.9	10.6	−1.3	62.2	63.5	256.7	121.8	134.9	2.6
1970	1,075.3	668.9	88.9	282.7	297.3	154.7	150.4	110.0	42.8	67.2	40.4	38.9	.6	.9	4.3	1.4	67.1	65.7	250.2	110.7	139.5	−.3
1971	1,107.5	691.9	98.1	287.5	306.3	166.8	160.2	108.0	41.7	66.3	52.2	50.5	.7	1.0	6.6	−.6	67.9	68.5	249.4	103.9	145.5	3.0
1972	1,171.1	733.0	111.2	299.3	322.4	188.3	178.8	116.8	42.5	74.3	62.0	60.3	.7	1.1	9.4	−3.3	72.7	75.9	253.1	102.1	151.0	5.7
1973	1,233.4	786.3	120.9	309.6	335.8	207.4	191.4	131.3	45.3	85.9	60.1	58.4	.5	1.2	16.0	7.2	87.6	80.4	252.5	96.1	156.3	6.3
1974	1,210.7	759.8	112.5	303.0	344.4	180.0	172.2	127.5	42.7	84.9	44.7	42.6	.8	1.3	7.7	16.6	97.6	81.0	254.3	95.0	159.3	−1.8
1975 [3]	1,186.4	766.6	109.3	306.9	350.4	138.9	149.0	112.4	37.1	75.3	36.6	35.0	.4	1.2	−10.1	23.5	90.4	66.9	257.4	94.2	163.2	−2.0

[1] Net of Government sales.

[2] Changes are based on unrounded data and therefore may differ slightly from those obtained from data shown here.

Source: Department of Commerce, Bureau of Economic Analysis.

Columns 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22

Source: Economic Report of the President, 1976

TABLE 6-4
GROSS NATIONAL PRODUCT OR EXPENDITURES
IN 1972 DOLLARS 1950-1975
(CONTINUED)

Average Annual % Change From:

	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8	Column 9	Column 10	Column 11
1950-55	4.18	3.16	3.76	2.76	3.47	2.13	2.97	4.13	5.78	3.61	1.12
1955-60	2.39	2.77	.11	2.35	4.07	.25	.96	1.52	2.63	.16	- .06
1960-65	4.67	4.26	6.93	3.22	4.59	7.33	6.56	7.69	6.58	8.52	4.30
1965-70	3.04	3.69	3.91	3.00	4.31	.61	1.62	2.85	1.57	3.71	-1.33
1970-75	1.99	2.76	4.22	1.66	3.34	-2.13	- .19	.43	-2.82	2.30	-1.96
1950-75	3.25	3.33	3.76	2.59	3.96	1.59	2.36	3.39	2.69	3.63	.39

Average Annual % Change From:

	Column 12	Column 13	Column 14	Column 15	Column 16	Column 17	Column 18	Column 19	Column 20	Column 21
1950-55	1.42	-7.09	5.92	NS	3.28	5.15	5.56	9.08	13.08	4.77
1955-60	- .06	-2.33	4.56	NS	3.19	5.11	5.49	2.76	.88	5.08
1960-65	4.30	-0-	6.96	NS	8.32	6.52	6.24	3.92	2.05	5.88
1965-70	-1.33	-5.59	5.15	NS	-29.78	6.45	9.89	3.60	1.95	5.04
1970-75	-2.09	-7.79	5.92	NS	75.79	6.14	.36	5.69	-3.18	3.19
1950-75	.42	-4.61	5.70	NS	7.34	5.87	5.46	3.95	2.82	4.79

NS = Percent change not relevant

TABLE 6-5
IMPLICIT PRICE DEFLATORS FOR GROSS NATIONAL PRODUCT 1950-1975

TABLE B-3.—*Implicit price deflators for gross national product,*

[Index numbers, 1972=100, except as noted; quarterly data seasonally adjusted]

Year or quarter	Gross national product [1]	Personal consumption expenditures				Gross private domestic investment [1]				Gross private domestic investment [1]—continued				Exports and imports of goods and services [1]		Government purchases of goods and services			Gross domestic product	Percent change from preceding period [2]	
						Fixed investment				Fixed investment—continued											
							Nonresidential			Residential											
		Total	Durable goods	Nondurable goods	Services	Total	Total	Structures	Producers' durable equipment	Total	Nonfarm structures	Farm structures	Producers' durable equipment	Exports	Imports	Total	Federal	State and local		Gross national product	Gross domestic product
1950	53.64	56.8	70.8	60.7	47.4	56.5	54.3	48.8	57.6	60.0	59.5	59.4	107.4	64.0	67.8	39.4	39.9	39.0	53.6	2.0	1.9
1951	57.27	60.5	74.7	65.8	49.9	60.8	58.9	54.7	61.6	64.4	63.8	63.8	114.9	73.1	81.8	45.3	47.1	42.4	57.2	6.8	6.7
1952	58.00	61.9	74.8	66.6	52.6	62.1	59.9	55.8	62.5	66.4	65.8	65.7	114.6	73.0	79.1	47.4	48.9	44.2	57.9	1.3	1.2
1953	58.88	63.1	75.5	66.3	55.4	62.9	61.0	56.8	63.7	66.9	66.3	66.2	114.2	71.9	75.8	48.5	50.2	45.1	58.8	1.5	1.6
1954	59.69	63.6	73.2	66.6	57.2	63.4	61.4	55.9	65.4	67.1	66.6	66.5	112.4	71.2	76.9	48.9	50.4	46.6	59.6	1.4	1.4
1955	60.98	64.2	74.0	66.3	58.5	64.8	62.6	57.0	66.5	68.7	68.2	68.3	109.1	71.8	76.8	49.7	51.1	47.8	60.9	2.2	2.2
1956	62.90	65.5	76.0	67.3	60.2	68.3	67.0	61.8	71.0	70.9	70.5	70.6	104.3	73.9	78.3	52.1	53.4	50.4	62.8	3.1	3.1
1957	65.02	67.6	79.2	69.4	62.2	70.9	70.7	64.4	75.4	71.3	70.8	70.9	103.4	76.4	79.5	54.4	55.7	52.8	65.0	3.4	3.5
1958	66.06	69.1	79.4	71.0	64.2	70.8	70.6	63.3	76.5	71.2	70.7	70.8	101.9	75.7	76.5	56.1	58.1	53.8	66.0	1.6	1.5
1959	67.52	70.4	81.9	71.4	65.0	71.6	72.0	63.6	78.2	71.0	70.6	70.8	101.8	75.4	75.7	57.2	58.7	55.4	67.5	2.2	2.3
1960	68.67	71.7	82.1	72.6	68.0	71.9	72.2	63.1	79.3	71.4	70.9	71.2	100.8	77.1	76.7	58.0	59.1	56.8	68.6	1.7	1.6
1961	69.28	72.5	82.7	73.3	69.1	71.6	71.8	62.7	79.2	71.3	70.9	70.7	99.1	78.0	76.1	59.2	60.0	58.3	69.2	.9	.9
1962	70.55	73.6	83.9	73.9	70.4	72.0	72.3	63.0	79.4	71.5	71.1	71.3	96.8	77.3	74.5	61.1	61.8	60.3	70.5	1.8	1.9
1963	71.59	74.7	84.8	74.9	71.7	72.1	72.9	63.5	79.6	70.9	70.5	70.7	95.3	77.5	75.6	62.6	63.3	61.9	71.6	1.5	1.6
1964	72.71	75.7	85.7	75.8	72.8	72.8	73.6	64.4	80.1	71.2	70.8	71.0	94.3	78.3	77.1	64.0	64.8	63.3	72.7	1.6	1.5
1965	74.32	77.1	85.6	77.3	74.3	73.8	74.5	65.9	80.6	72.3	72.0	72.3	92.1	[illegible]	[illegible]	66.0	67.0	65.1	74.3	2.2	2.2
1966	76.76	79.3	85.7	80.1	76.5	76.2	76.8	68.8	82.1	74.6	74.2	74.3	90.8	[illegible]	[illegible]	69.2	70.1	68.4	76.8	3.3	3.4
1967	79.02	81.3	87.4	81.9	78.8	78.7	79.3	71.8	84.3	77.0	76.7	76.7	91.0	[illegible]	[illegible]	72.6	72.6	72.5	79.0	2.9	2.9
1968	82.57	84.6	90.7	85.3	82.0	82.1	82.6	75.3	87.3	80.7	80.4	80.5	93.2	[illegible]	[illegible]	76.7	76.4	76.9	82.6	4.5	4.6
1969	86.72	88.5	93.1	89.4	86.1	86.9	86.6	81.1	90.0	87.7	87.5	87.5	95.2	87.9	83.3	81.0	80.0	81.9	86.8	5.0	5.1
1970	91.36	92.5	95.5	93.6	90.5	91.1	91.3	88.0	93.4	90.6	90.4	90.5	97.5	93.1	89.1	87.5	86.4	88.3	91.4	5.4	5.3
1971	96.02	96.6	99.0	96.6	95.8	95.9	96.4	94.4	97.6	94.9	94.8	95.0	99.3	96.6	92.5	93.7	92.6	94.5	96.0	5.1	5.0
1972	100.00	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	4.1	4.2
1973	105.92	105.5	101.7	108.0	104.6	106.0	104.0	108.0	101.8	110.6	110.8	110.7	100.3	116.0	117.1	106.9	106.1	107.5	105.8	5.9	5.8
1974	116.20	116.6	108.4	124.0	112.7	117.6	116.0	127.5	110.2	122.1	122.6	122.9	105.4	147.8	168.6	118.4	117.6	118.9	115.7	9.7	9.4
1975 p	126.35	125.6	116.8	133.6	121.4	132.6	132.3	141.7	127.7	133.5	134.1	133.7	116.3	162.9	188.0	128.5	130.6	127.3	126.0	8.7	8.9

[1] Separate deflators are not available for gross private domestic investment, change in business inventories, and net exports of goods and services.

[2] Changes are based on unrounded data and therefore may differ slightly from those obtained from data shown here. Quarterly data are at annual rates.

Source: Department of Commerce, Bureau of Economic Analysis.

Columns 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

Source: Economic Report of the President, 1976

TABLE 6-5

IMPLICIT PRICE DEFLATORS FOR GROSS NATIONAL PRODUCT 1950-1975 (CONTINUED)

Average Annual % Change From:

	Column 1	Column 6	Column 14	Column 15	Column 16	Column 17	Column 18	Column 19
1950-55	2.60	2.78	2.33	2.52	4.75	5.07	4.15	2.59
1955-60	2.40	2.10	1.43	-.02	3.14	2.95	3.51	2.41
1960-65	1.59	.52	.87	.34	2.62	2.54	2.77	1.61
1965-70	4.21	4.16	2.95	2.70	5.80	5.22	6.29	4.23
1970-75	6.70	7.94	11.84	16.11	7.99	8.61	7.59	6.63
1950-75	3.49	3.47	3.81	4.16	4.84	4.85	4.85	3.48

TABLE 6-6
RELATION OF GROSS NATIONAL PRODUCT (GNP) TO NET NATIONAL PRODUCT (NNP) TO NATIONAL INCOME (NI) 1950-1975

TABLE B-11.—*Relation of gross national product and national income*

[Billions of dollars; quarterly data at seasonally adjusted annual rates]

Year or quarter	Gross national product	Less: Capital consumption allowances with capital consumption adjustment	Equals: Net national product	Plus: Subsidies less current surplus of government enterprises	Less: Indirect business tax and nontax liability	Less: Business transfer payments	Less: Statistical discrepancy	Equals: National income
1950	286.2	23.9	262.3	.1	23.4	.8	2.0	236.2
1951	330.2	27.6	302.6	-.1	25.3	.9	4.0	272.3
1952	347.2	29.6	317.6	-.3	27.7	1.0	2.7	285.8
1953	366.1	31.6	334.5	-.5	29.7	1.2	3.3	299.7
1954	366.3	33.1	333.2	-.3	29.6	1.1	1.0	299.1
1955	399.3	35.3	364.0	-.0	32.2	1.2	2.5	328.0
1956	420.7	38.9	381.8	.7	35.1	1.4	-.8	346.9
1957	442.8	42.0	400.8	.7	37.5	1.5	.2	362.3
1958	448.9	44.1	404.8	1.1	38.7	1.6	1.7	364.0
1959	486.5	46.1	440.4	.1	41.8	1.8	-.2	397.1
1960	506.0	47.7	458.3	.4	45.4	2.0	-.7	412.0
1961	523.3	49.1	474.2	1.7	48.0	2.0	1.6	424.2
1962	563.8	50.5	513.3	1.8	51.6	2.1	4.0	457.4
1963	594.7	52.2	542.5	1.1	54.6	2.4	1.7	482.8
1964	635.7	54.6	581.2	1.7	58.8	2.7	2.2	519.2
1965	688.1	57.5	630.6	1.6	62.6	2.8	.9	566.0
1966	753.0	61.7	691.3	2.5	65.3	3.0	1.2	622.2
1967	796.3	67.0	729.3	1.6	70.2	3.1	1.7	655.8
1968	868.5	73.2	794.7	1.3	78.8	3.4	-.6	714.4
1969	935.5	82.5	853.1	1.9	86.4	3.8	-3.3	767.9
1970	982.4	90.8	891.6	2.7	94.0	4.0	-2.1	796.4
1971	1,063.4	98.8	964.7	2.4	103.4	4.2	1.3	854.1
1972	1,171.1	105.4	1,065.8	3.6	111.0	4.7	1.7	951.9
1973	1,306.3	117.1	1,189.3	1.7	120.2	5.2	-.4	1,067.3
1974	1,406.9	134.0	1,272.9	.7	127.3	5.8	-.8	1,141.1
1975 p	1,499.0	152.5	1,346.4	1.9	137.2	6.3	-4.6	1,208.5

Source: Department of Commerce, Bureau of Economic Analysis.

Columns 1 2 3 4 5 6 7 8

Source: Eonomic Report of the President, 1976

Average Annual % Change From:

	Column 1	Column 2	Column 3	Column 5	Column 6	Column 8
1950-55	6.96	8.11	6.77	6.59	8.45	6.79
1955-60	4.85	6.21	4.72	7.11	10.76	4.67
1960-65	6.34	3.81	6.59	6.64	6.96	6.56
1965-70	7.38	9.57	7.17	8.47	7.39	7.12
1970-75	8.82	10.93	8.59	7.86	9.51	8.66
1950-75	6.86	7.69	6.76	7.33	8.61	6.75

TABLE 6-7
TOTAL GROSS NATIONAL PRODUCT, NET NATIONAL PRODUCT AND NATIONAL INCOME CURRENT DOLLARS, 1950-1975
(BILLIONS)

Year	Gross National Product (GNP)	% Change From Prior Period	Net National Product (NNP)	% Change From Prior Period	National Income (NI)	% Change From Prior Period
1950	286.2	--	262.3	--	236.2	--
1951	330.2	15.4	302.6	15.4	272.3	15.3
1952	347.2	5.1	317.6	5.0	285.8	5.0
1953	366.1	5.5	334.5	5.3	299.7	4.9
1954	366.3	.0	333.2	- .4	299.1	- .2
1955	399.3	9.0	364.0	9.2	328.0	9.7
1956	420.7	5.4	381.8	4.9	346.9	5.8
1957	442.8	5.2	400.8	5.0	362.3	4.4
1958	448.9	1.4	404.8	1.0	364.0	.5
1959	486.5	8.4	440.4	8.8	397.1	9.1
1960	506.0	4.0	458.3	4.1	412.0	3.8
1961	523.3	3.4	474.2	3.5	424.2	3.0
1962	563.8	7.7	513.3	8.2	457.4	7.8
1963	594.7	5.5	542.5	5.7	482.8	5.6
1964	635.7	6.9	581.2	7.1	519.2	7.5
1965	688.1	8.2	630.6	8.5	566.0	9.0
1966	753.0	9.4	691.3	9.6	622.2	9.9
1967	796.3	5.8	729.3	5.5	655.8	5.4
1968	868.5	9.1	794.7	9.0	714.4	8.9
1969	935.5	7.7	853.1	7.3	767.9	7.5
1970	982.4	5.0	891.6	4.5	798.4	4.0
1971	1,063.4	8.2	964.7	8.2	858.1	7.5
1972	1,171.1	10.1	1,065.8	10.5	951.9	10.9
1973	1,306.3	11.5	1,189.3	11.6	1,067.3	12.1
1974	1,406.9	7.7	1,272.9	7.0	1,141.1	6.9
1975	1,499.0	6.5	1,346.4	5.8	1,209.5	6.0
Average Annual % Change From:						
1950-55	6.96		6.77		6.79	
1955-60	4.85		4.72		4.67	
1960-65	6.34		6.59		6.56	
1965-70	7.38		7.17		7.12	
1970-75	8.82		8.59		8.66	
1950-75	6.86		6.76		6.75	

Source: Economic Report of the President, 1976.

TABLE 6-8
TOTAL GROSS NATIONAL PRODUCT, NET NATIONAL INCOME
CONSTANT 1972 DOLLARS, 1950-1975 (BILLIONS)

Year	Gross National Product (GNP)	% Change From Prior Period	Net National Product (NNP)	% Change From Prior Period	National Income (NI)	% Change From Prior Period
1950	533.5	--	489.4	--	440.7	--
1951	576.5	8.1	529.0	8.1	476.0	8.0
1952	598.5	3.8	548.5	3.7	493.6	3.7
1953	621.8	3.9	568.9	3.7	509.7	3.3
1954	613.7	-1.3	559.1	-1.2	501.8	-1.5
1955	654.8	6.7	597.7	6.9	538.6	7.3
1956	668.8	2.1	608.0	1.7	552.4	2.6
1957	680.9	1.8	616.6	1.4	557.2	.9
1958	679.5	- .2	613.3	- .5	551.5	-1.0
1959	720.4	6.0	652.4	6.4	588.3	6.7
1960	736.8	2.3	668.1	2.4	600.6	2.1
1961	755.3	2.5	685.3	2.6	613.0	2.1
1962	799.1	5.8	728.1	6.2	648.8	5.8
1963	830.7	4.0	757.7	4.1	674.3	3.9
1964	874.4	5.3	799.5	5.5	714.2	5.9
1965	925.9	5.9	848.7	6.2	761.8	6.6
1966	981.0	5.9	900.1	6.1	810.2	6.4
1967	1,007.7	2.7	923.2	2.6	830.1	2.5
1968	1,051.8	4.4	962.1	4.2	864.9	4.2
1969	1,078.8	2.6	982.8	2.2	884.7	2.3
1970	1,075.3	- .3	975.5	- .7	873.5	-1.3
1971	1,107.5	3.0	1,004.9	3.0	893.9	2.3
1972	1,171.1	5.7	1,065.8	6.1	951.9	6.5
1973	1,233.4	5.3	1,124.1	5.5	1,008.8	6.0
1974	1,210.7	-1.8	1,100.2	-2.1	986.3	-2.2
1975	1,186.4	-2.0	1,068.6	-2.9	959.9	-2.7
Average Annual % Change From:						
1950-55	4.18		4.08		4.09	
1955-60	2.39		2.25		2.20	
1960-65	4.67		4.90		4.87	
1965-70	3.04		2.82		2.77	
1970-75	1.97		1.84		1.90	
1950-75	3.25		3.17		3.16	

Source: Economic Report of the President, 1976.

TABLE 6-9
CONSUMER PRICE INDEXES BY EXPENDITURE CLASSES 1950-1975

PRICES

TABLE B-42.—*Consumer price indexes by expenditure classes, For urban wage earners and clerical workers*

[1967 = 100]

Year or month	All items	Food	Housing		Apparel and upkeep	Transportation	Medical care	Personal care	Reading and recreation	Other goods and services
			Total	Rent						
1950	72.1	74.5	72.8	70.4	79.0	68.2	53.7	88.3	74.4	68.9
1951	77.8	82.8	77.2	73.2	86.1	72.5	56.3	74.7	76.6	72.8
1952	79.5	84.3	78.7	76.2	85.3	77.3	59.3	75.6	76.9	76.6
1953	80.1	83.0	80.8	80.3	84.6	79.5	61.4	76.3	77.7	78.5
1954	80.5	82.8	81.7	83.2	84.5	78.3	63.4	76.6	76.9	79.8
1955	80.2	81.6	82.3	84.3	84.1	77.4	64.8	77.9	76.7	79.8
1956	81.4	82.2	83.6	85.9	85.8	78.8	67.2	81.1	77.8	81.0
1957	84.3	84.9	86.2	87.5	87.3	83.3	69.9	84.1	80.7	83.3
1958	86.6	88.5	87.7	89.1	87.5	86.0	73.2	86.9	83.9	84.4
1959	87.3	87.1	88.6	90.4	88.2	89.6	76.4	88.7	85.3	86.1
1960	88.7	88.0	90.2	91.7	89.6	89.6	79.1	90.1	87.3	87.8
1961	89.6	89.1	90.9	92.9	90.4	90.6	81.4	90.6	89.3	88.5
1962	90.6	89.9	91.7	94.0	90.9	92.5	83.5	92.2	91.3	89.1
1963	91.7	91.2	92.7	95.0	91.9	93.0	85.6	93.4	92.8	90.6
1964	92.9	92.4	93.8	95.9	92.7	94.3	87.3	94.5	95.0	92.0
1965	94.5	94.4	94.9	96.9	93.7	95.9	89.5	95.2	95.9	94.2
1966	97.2	99.1	97.2	98.2	96.1	97.2	93.4	97.1	97.5	97.2
1967	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1968	104.2	103.6	104.2	102.4	105.4	103.2	106.1	104.2	104.7	104.6
1969	109.8	108.9	110.8	105.7	111.5	107.2	113.4	109.3	108.7	109.1
1970	116.3	114.9	118.9	110.1	116.1	112.3	120.6	113.2	113.4	116.0
1971	121.3	118.4	124.3	115.2	119.8	118.6	128.4	116.8	119.3	120.9
1972	125.3	123.5	129.2	119.2	122.3	119.9	132.5	119.6	122.8	125.5
1973	133.1	141.4	135.0	124.3	126.8	123.8	137.7	125.2	125.9	129.0
1974	147.7	161.7	150.6	130.6	136.2	137.7	150.5	137.3	133.8	137.2
1975	161.2	175.4	166.8	137.3	142.3	150.6	168.6	150.7	144.4	147.4

Source: Department of Labor, Bureau of Labor Statistics.

Columns 1 2 3 4 5 6 7 8 9 10

Source: Economic Report of the President, 1976.

Average Annual % Change From:

	Column 1	Column 2	Column 3	Column 4	Column 5
1950-55	2.15	1.84	2.48	3.67	1.26
1955-60	2.04	1.52	1.85	1.68	1.28
1960-65	1.27	1.41	1.02	1.11	.90
1965-70	4.24	4.01	4.61	2.59	4.38
1970-75	6.75	8.83	7.00	4.51	4.15
1950-75	3.27	3.48	3.37	2.71	2.38

	Column 6	Column 7	Column 8	Column 9	Column 10
1950-55	2.56	3.83	2.67	.61	2.68
1955-60	2.97	4.07	2.95	2.26	1.93
1960-65	1.37	2.50	1.11	1.90	1.42
1965-70	3.28	6.15	3.52	3.41	4.25
1970-75	5.97	6.93	5.89	1.76	4.91
1950-75	3.22	4.68	3.22	1.74	3.03

TABLE 6-10
SOURCES OF PERSONAL INCOME 1950-1975

TABLE B-15.—*Sources of personal income,*

[Billions of dollars; quarterly data at seasonally adjusted annual rates]

Year or quarter	Personal income	Wage and salary disbursements[1]						Other labor income[1]	Proprietors' income with inventory valuation and capital consumption adjustments		Rental income of persons with capital consumption adjustment	Dividends	Personal interest income	Transfer payments						Less: Personal contributions for social insurance	Nonfarm personal income[2]
		Total	Commodity-producing industries		Distributive industries	Service industries	Government and government enterprises		Farm	Nonfarm				Total	Old age, survivors, disability, and health insurance benefits	Government unemployment insurance benefits	Veterans benefits	Government employee retirement benefits	Aid to families with dependent children (AFDC)	Other		
			Total	Manufacturing																		
1950	226.1	147.0	64.6	50.3	39.8	20.0	22.6	3.7	13.5	24.9	7.1	8.8	8.9	15.2	1.0	1.5	7.7	1.0	.6	3.5	2.9	209.3
1951	253.7	171.3	76.1	59.3	44.3	21.7	29.2	4.6	15.8	27.0	7.7	8.5	9.6	12.6	1.9	.9	4.6	1.1	.6	3.6	3.4	234.4
1952	270.4	185.4	81.9	64.1	46.9	23.3	33.3	5.2	14.9	28.0	8.8	8.5	10.3	13.1	2.2	1.1	4.3	1.2	.5	3.8	3.8	252.0
1953	286.1	198.6	89.4	71.2	49.7	25.0	34.4	5.9	12.9	28.4	10.0	8.8	11.4	14.1	3.0	1.0	4.1	1.4	.5	4.1	4.0	269.9
1954	288.2	196.8	85.5	67.5	50.1	26.3	34.9	6.1	12.3	28.5	11.0	9.1	12.7	16.2	3.6	2.2	4.2	1.5	.6	4.1	4.6	272.7
1955	308.8	211.7	92.9	73.8	53.4	28.8	36.6	7.0	11.3	31.2	11.3	10.3	13.8	17.5	4.9	1.5	4.4	1.7	.6	4.3	5.2	294.3
1956	330.9	228.2	100.4	79.4	57.7	31.5	38.8	8.0	11.2	32.4	11.6	11.1	15.3	18.7	5.7	1.5	4.4	1.9	.6	4.5	5.8	316.4
1957	349.3	239.3	104.0	82.4	60.5	33.8	41.0	9.0	11.0	33.9	12.2	11.5	17.4	21.6	7.3	1.9	4.5	2.2	.7	4.9	6.7	335.0
1958	359.3	240.5	99.8	78.6	60.8	35.8	44.1	9.4	13.1	34.3	12.9	11.3	18.8	25.9	8.5	4.1	4.7	2.5	.8	5.3	6.9	342.6
1959	382.1	258.9	109.3	86.8	64.8	38.8	46.0	10.6	10.7	36.6	13.2	12.2	20.9	27.0	10.2	2.8	4.6	2.8	.9	5.8	7.9	367.7
1960	399.3	271.9	112.9	89.7	68.2	41.7	49.2	11.2	11.4	35.6	13.8	12.9	23.3	28.9	11.1	3.0	4.6	3.1	1.0	6.2	9.3	384.4
1961	415.0	279.5	113.4	89.8	69.3	44.4	52.4	11.8	11.8	36.4	14.3	13.3	24.6	32.8	12.6	4.3	5.0	3.4	1.1	6.4	9.7	399.0
1962	440.7	298.0	121.5	96.7	72.8	47.5	56.3	13.0	11.9	37.7	15.0	14.4	27.1	33.8	14.3	5.1	4.7	3.7	1.3	6.7	10.3	424.5
1963	463.1	313.4	126.6	100.6	76.3	50.6	60.0	14.0	11.6	38.7	15.7	15.5	30.2	35.8	15.2	5.0	4.8	4.2	1.4	7.3	11.8	447.0
1964	495.7	336.1	135.1	107.1	81.4	54.7	64.9	15.7	10.3	42.0	16.1	17.3	33.3	37.4	16.0	2.7	4.7	4.7	1.5	7.8	12.6	480.7
1965	537.0	362.0	145.7	115.5	87.2	59.2	69.9	17.8	12.6	44.1	17.1	19.1	37.2	40.4	18.1	2.3	4.9	5.2	1.7	8.3	13.3	519.5
1966	584.9	398.4	160.7	128.0	94.4	65.0	78.3	19.9	13.6	46.7	18.2	19.4	41.8	44.7	19.8	1.9	4.9	6.1	1.9	10.2	17.8	566.1
1967	626.6	427.5	168.0	134.1	100.9	72.2	86.4	21.7	12.1	48.9	19.4	20.1	45.0	52.6	25.5	2.2	5.6	6.9	2.3	10.2	20.6	609.1
1968	685.2	469.5	183.0	145.8	109.9	80.2	96.4	25.1	12.0	51.4	18.6	21.9	49.6	59.9	30.2	2.1	5.9	7.7	2.9	11.1	22.8	667.5
1969	745.8	514.6	199.1	157.5	120.7	89.9	104.9	28.2	13.9	52.3	18.1	22.6	55.9	66.5	32.9	2.2	6.7	8.6	3.5	12.5	26.3	725.8
1970	801.3	546.5	202.5	158.2	130.1	97.9	116.0	32.0	13.9	51.2	18.6	22.9	64.3	79.9	38.5	4.0	7.7	10.1	4.8	14.9	28.0	780.7
1971	859.1	579.4	207.8	160.3	139.3	106.8	125.6	36.2	14.3	53.4	20.1	23.0	69.3	94.1	44.5	5.8	8.8	11.7	6.2	17.2	30.8	838.0
1972	942.5	633.8	226.7	175.4	151.9	117.9	137.3	42.0	18.0	58.1	22.5	24.6	74.6	104.1	49.6	5.6	9.7	13.5	6.9	18.9	34.2	917.3
1973	1,054.3	701.0	253.4	196.2	168.1	130.8	148.6	47.5	32.4	59.3	21.3	27.8	88.4	118.6	60.4	4.3	10.4	15.6	7.2	20.8	42.2	1,013.5
1974	1,154.7	763.6	273.7	211.2	184.3	145.0	160.6	54.5	25.6	59.5	21.0	31.1	106.5	140.4	70.1	6.6	11.7	18.5	7.9	25.5	47.4	1,119.1
1975 r	1,248.8	801.6	273.5	211.1	195.1	158.6	174.4	61.3	24.6	58.7	23.1	32.8	120.7	175.0	88.4	17.5	14.3	21.8	9.1	30.9	49.8	1,210.2

[1] The total of wage and salary disbursements and other labor income differs from compensation of employees in Table B-12 in that it excludes employer contributions for social insurance and the excess of wage accruals over wage disbursements.

[2] Nonfarm income is personal income exclusive of net income of unincorporated farm enterprises, farm wages, agricultural net interest, and net dividends paid by farm corporations.

Source: Department of Commerce, Bureau of Economic Analysis.

Columns 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

Source: Economic Report of the President, 1976

TABLE 6-10
SOURCES OF PERSONAL INCOME 1950-1975
(CONTINUED)

Average Annual % Change From:

	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8	Column 9	Column 10	Column 11
1950-55	6.43	7.57	7.53	7.80	6.06	7.57	10.12	13.60	-3.50	4.61	9.74
1955-60	5.30	5.13	3.98	3.98	5.01	7.68	6.09	9.86	.18	2.67	4.08
1960-65	6.08	5.89	5.23	5.19	5.04	7.26	7.28	9.71	2.02	4.38	4.38
1965-70	8.33	8.59	6.81	6.49	8.33	10.58	10.66	12.45	1.98	3.03	1.70
1970-75	9.23	7.96	6.20	5.94	8.44	10.13	8.50	13.88	12.09	2.77	2.55
1950-75	7.07	7.02	5.94	5.91	6.57	8.63	8.52	11.88	2.43	3.49	4.45

Average Annual % Change From:

	Column 12	Column 13	Column 14	Column 15	Column 16	Column 17	Column 18	Column 19	Column 20	Column 21
1950-55	3.20	9.17	2.86	37.42	-0-	-10.59	11.20	-0-	4.20	12.39
1955-60	4.60	11.04	10.55	17.77	14.87	.89	12.77	10.76	7.59	12.33
1960-65	8.77	9.81	6.93	10.27	-5.18	1.27	10.90	11.20	6.01	7.42
1965-70	3.70	11.57	14.61	16.29	11.70	9.46	14.20	23.07	12.41	16.05
1970-75	7.45	13.42	16.98	16.15	34.35	13.18	16.63	13.65	15.71	12.21
1950-75	5.40	10.99	10.27	19.24	10.33	2.51	13.12	11.49	9.10	12.05

Population

The data dealing with the American population, along with some of its demographic characteristics are presented in tables 6-11 through 6-14 and in figures 6-1 and 6-2. Unlike some of the variable attributes associated with the major economic indicator of NNP, the listed attributes of the American population are not cumulative in nature. For example, the approximate size of the total population in 1975 as shown in table 6-11 is 213.631 million individuals made up of the various age groups as shown. The interpretation of the average annual percent change also differs. This percent change for the total population shows an average annual percent change of 1.36 percent over the 25 year time frame from 1950-75. The percent change over the individual five, 5 year periods comprising this 25 year time frame show a constant decrease during each successive period.

The change in the age distribution of the American population is rather significant. The "under 5" age group began to decline during the 1960-65 year period and has continued to decrease since that time, thus producing an initial ripple effect within the total population. By comparing the average annual percent changes in columns 2 and 3 it can be seen that the decrease in the "under 5" category continually reduced the growth rate of the "5-15" year age category until its average annual percent change became negative during the 1970-75 period. A ripple effect from prior periods can also be seen

in columns 5 and 6, and extending into column 7. A negative average annual percent change in the "20-24" year age group during the 1950-55 period affected the size of the "25-44" year age group during the two periods 1955-60 and 1960-65. This decrease in the "25-44" year age group eventually appeared in the "45-64" age group during the 1970-75 period.

The average annual percent change in the "65 and over" age group beginning in the 1950-55 period, shows a decreasing percent change while still remaining positive until the 1965-70 period at which time the percent change began to increase. Although the average annual percent change during the 1970-75 period was 2.20 percent, the annual percent change from 1974-75 was 2.64 percent. Thus, although the various ripple effects will undoubtedly produce negative annual percent change in the age categories under 65 years of age it would appear valid to state that the "65 and over" category will continue to display a positive annual percent change barring a national disaster. This phenomenon under present policies and customs will have tremendous potential implications on the future of the American society. Some of these potential implications are indicated in later sections of this paper.

TABLE 6-11
POPULATION BY AGE GROUPS 1950-1975

TABLE B-21.—*Population by age groups,*

[Thousands of persons]

July 1	Total	Age (years)						
		Under 5	5-15	16-19	20-24	25-44	45-64	65 and over
1950	152, 271	16, 410	26, 721	8, 542	11, 688	45, 672	30, 849	12, 397
1951	154, 878	17, 333	27, 279	8, 446	11, 552	46, 103	31, 362	12, 803
1952	157, 553	17, 312	28, 894	8, 414	11, 250	46, 495	31, 884	13, 203
1953	160, 184	17, 538	30, 227	8, 460	11, 062	46, 786	32, 394	13, 617
1954	163, 026	18, 057	31, 480	8, 637	10, 832	47, 001	32, 942	14, 076
1955	165, 931	18, 566	32, 682	8, 744	10, 714	47, 194	33, 508	14, 525
1956	168, 903	19, 003	33, 994	8, 916	10, 616	47, 379	34, 057	14, 938
1957	171, 984	19, 494	35, 272	9, 195	10, 603	47, 440	34, 591	15, 388
1958	174, 882	19, 887	36, 445	9, 543	10, 756	47, 337	35, 109	15, 806
1959	177, 830	20, 175	37, 368	10, 215	10, 969	47, 192	35, 663	16, 248
1960	180, 671	20, 341	38, 494	10, 683	11, 134	47, 140	36, 203	16, 675
1961	183, 691	20, 522	39, 765	11, 025	11, 483	47, 084	36, 722	17, 089
1962	186, 538	20, 469	41, 205	11, 180	11, 959	47, 013	37, 255	17, 457
1963	189, 242	20, 342	41, 626	12, 007	12, 714	46, 994	37, 782	17, 778
1964	191, 889	20, 165	42, 297	12, 736	13, 289	46, 958	38, 338	18, 127
1965	194, 303	19, 824	42, 938	13, 516	13, 746	46, 912	38, 916	18, 451
1966	196, 560	19, 208	43, 702	14, 311	14, 050	47, 001	39, 534	18, 755
1967	198, 712	18, 563	44, 244	14, 200	15, 248	47, 194	40, 193	19, 071
1968	200, 706	17, 913	44, 622	14, 452	15, 786	47, 721	40, 846	19, 365
1969	202, 677	17, 376	44, 840	14, 800	16, 480	48, 064	41, 437	19, 680
1970	204, 878	17, 148	44, 774	15, 274	17, 184	48, 436	41, 974	20, 087
1971	207, 053	17, 177	44, 440	15, 635	18, 089	48, 811	42, 413	20, 488
1972	208, 846	16, 981	43, 949	15, 947	18, 833	50, 256	42, 788	20, 893
1973	210, 410	16, 694	43, 227	16, 310	18, 345	51, 412	43, 077	21, 346
1974	211, 894	16, 292	42, 537	16, 590	18, 740	52, 594	43, 317	21, 824
1975	213, 631	15, 896	41, 977	16, 803	19, 242	53, 760	43, 551	22, 400

Note.—Includes Armed Forces overseas beginning 1940. Includes Alaska and Hawaii beginning 1950.

Source: Department of Commerce, Bureau of the Census.

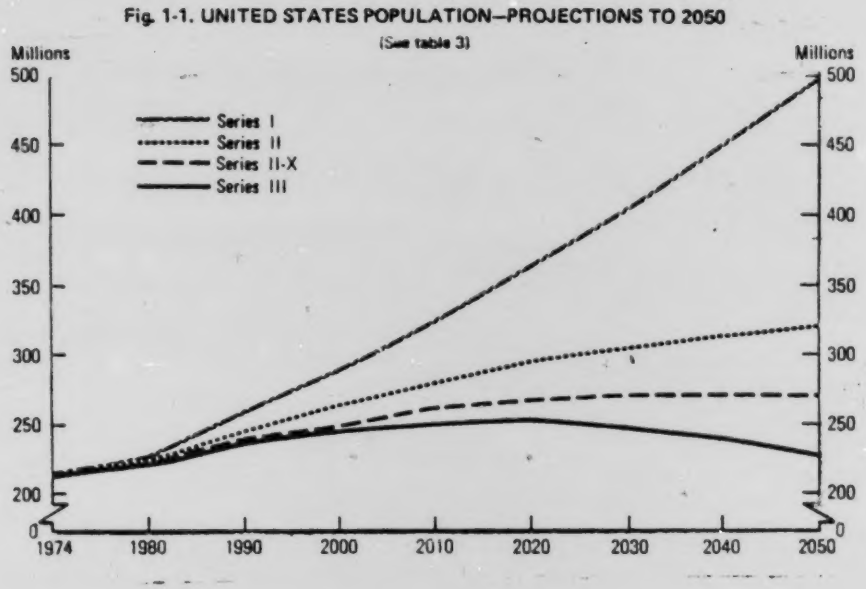
Columns	1	2	3	4	5	6	7	8

Source: Economic Report of the President, 1976.

Average Annual % Change From:

	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8
1950-55	1.73	2.50	4.11	.47	-1.71	.66	1.67	3.22
1955-60	1.72	1.84	3.33	4.09	.77	-.02	1.56	2.80
1960-65	1.47	- .51	2.21	4.82	4.30	-.10	1.46	2.04
1965-70	1.07	-2.86	.89	2.48	4.57	.69	1.52	1.71
1970-75	.84	-1.50	-1.28	1.93	2.29	2.11	.74	2.20
1974-75	.82	-2.43	-1.32	1.28	2.68	2.22	.54	2.64
1950-75	1.36	- .13	1.82	2.74	2.02	.65	1.39	2.39

Population



Source: Statistical Abstract of the United States, 1976

Figure 6-1. United States population-projections to 2050

TABLE 6-12
ESTIMATED AND PROJECTED POPULATION, BY ABE AND SEX, 1950 to 2000, AND ILLUSTRATE ZERO GROWTH PROJECTIONS, 1980 to 2050

No. 3. Estimated and Projected Population, by Age and Sex, 1950 to 2000, and Illustrative Zero Growth Projections, 1980 to 2050

[In thousands, except percent. As of July 1. Includes Armed Forces abroad. The base date for the projections is 1974. For 1975 figures, see table 28. These projections were prepared using the "cohort-component" method. Series I, II, and III assume a slight improvement in mortality, an annual net immigration of 400,000, and completed cohort fertility rates (i.e., average number of lifetime births per 1,000 woman) that move toward the following levels: I-2,700; II-2,100; III-1,700. Series II-X differs from Series II only in that it assumes no net immigration. The Series II and Series II-X fertility assumption represents "replacement level" fertility (i.e., the level of fertility at which the population would exactly replace itself in the absence of net immigration). See p. 1 for derivation of estimates and projections. See also *Historical Statistics, Colonial Times to 1970*, series A 23-25 and A 29-37]

YEAR, SERIES, AND SEX	Total, all ages	Under 5 years	5-13 years	14-17 years	18-21 years	22-24 years	25-34 years	35-44 years	45-54 years	55-64 years	65 years and over	16 years and over	18 years and over	21 years and over	Median age (yr.)
TOTAL															
1950	152,271	16,410	22,423	8,444	8,947	7,129	24,038	21,637	17,453	13,306	12,307	109,111	104,994	98,341	30.2
1960	180,671	20,341	32,965	11,219	9,558	6,573	22,919	24,221	20,578	15,625	16,675	121,845	116,146	108,856	29.4
1970	204,879	17,158	36,636	15,910	14,705	9,978	25,293	23,142	23,310	18,664	20,085	142,949	135,177	124,024	27.9
1974	211,909	16,304	34,082	16,878	16,108	10,800	29,770	22,823	23,821	19,507	21,815	153,068	144,844	132,304	28.6
Percent of total:															
1950	100.0	10.8	14.7	5.5	5.9	4.7	15.8	14.2	11.5	8.8	8.1	71.7	69.0	64.6	(X)
1960	100.0	11.3	18.2	6.2	5.3	3.6	12.7	13.4	11.4	8.6	9.2	67.4	64.3	60.3	(X)
1970	100.0	8.4	17.9	7.8	7.2	4.9	12.3	11.3	11.4	9.1	9.8	69.8	66.0	60.5	(X)
1974	100.0	7.7	16.1	8.0	7.6	5.1	14.0	10.8	11.2	9.2	10.3	72.2	68.3	62.5	(X)
Projections:															
1980—I	225,705	20,001	30,441	15,753	17,007	12,344	36,157	25,702	22,640	21,047	24,823	167,659	159,511	146,638	29.5
II	222,769	17,259	30,245												29.9
III	220,356	14,981	30,112												30.3
1985—I	241,274	24,042	33,330	14,388	15,431	12,404	39,846	31,332	22,378	21,485	26,659	178,533	169,515	156,154	30.1
II	234,068	19,785	30,380												31.1
III	228,355	16,498	27,954												31.8
1990—I	257,663	25,447	41,282	13,538	14,519	10,644	41,062	36,545	25,213	20,479	28,533	183,745	177,396	166,433	30.8
II	245,075	20,096	34,643	12,941											32.3
III	235,581	16,339	29,383	12,463											33.4
2000—I	287,007	24,654	45,923	20,575	18,829	11,749	34,684	41,315	35,742	22,937	30,600	205,938	195,855	181,428	31.4
II	262,494	18,364	35,983	16,751	16,002	10,325	34,494					190,709	191,415	179,189	34.8
III	245,096	14,288	29,119	13,915	13,727	9,000	34,366					194,710	187,778	177,337	37.0
MALE															
1950	75,849	8,362	11,415	4,269	4,484	3,525	11,804	10,706	8,715	6,714	5,856	53,903	51,803	48,460	29.8
1960	89,320	10,339	16,762	5,682	4,810	3,284	11,327	11,872	10,142	7,559	7,842	59,413	56,536	52,859	28.8
1970	100,266	8,746	18,667	8,101	7,435	4,998	12,521	11,316	11,251	8,825	8,405	69,706	64,751	59,114	28.0
1974	103,454	8,329	17,375	8,595	8,149	5,396	14,770	11,158	11,505	9,211	8,966	73,541	69,156	62,964	27.4
Projections:															
1980—I	109,979	10,237	15,544	8,031	8,647	6,166	17,987	12,467	10,998	9,920	9,914	80,322	76,167	69,659	28.4
II	108,474	8,832	15,444												28.8
III	107,328	7,664	15,376												29.1

Source: Statistical Abstract of the United States, 1975

TABLE 6-13

ESTIMATED AND PROJECTED POPULATION, BY AGE, SEX, 1950 TO 2000, AND ILLUSTRATE ZERO GROWTH PROJECTIONS, 1980 TO 2050 (CONTINUED)

MALE—Con.															
1985—I	117,560	12,315	17,052	7,344	7,813	6,197	19,790	15,256	10,875	10,132	10,684	84,427	80,849	75,104	28.9
II	113,896	10,122	15,541												29.8
III	110,940	8,448	14,208												30.6
1990—I	125,805	13,042	21,144	6,923	7,364	5,316	20,280	17,937	12,253	9,719	11,518	87,740	84,496	78,938	29.6
II	119,154	10,299	17,742	6,618											31.1
III	114,200	8,373	15,048	6,373											32.2
2000—I	140,072	12,643	23,543	10,539	9,578	5,892	17,220	20,247	17,448	10,912	12,041	98,500	93,347	86,013	29.7
II	127,521	9,416	18,433	8,579	8,136	5,174	17,133					95,339	91,094	84,880	33.3
III	118,617	7,325	14,921	7,124	6,979	4,851	17,060					92,795	89,247	83,944	35.7
FEMALE															
1950	76,422	8,048	11,008	4,175	4,463	3,603	12,233	10,931	8,738	6,982	8,541	55,: 8	53,191	49,881	30.5
1960	91,352	10,002	16,203	5,537	4,745	3,289	11,891	12,349	10,436	8,067	9,133	62,422	59,610	55,907	30.3
1970	104,613	8,410	17,908	7,808	7,370	4,980	12,772	11,826	12,059	9,836	11,680	74,243	70,425	64,910	29.2
1974	108,455	7,976	16,706	8,263	7,958	5,404	15,000	11,665	12,315	10,298	12,849	79,617	75,488	69,430	29.8
Projections:															
1980—I	115,726	9,765	14,897	7,721	8,450	6,178	18,190	13,144	11,648	11,128	14,609	87,337	83,344	78,979	30.8
II	114,205	8,428	14,802												31.3
III	113,118	7,317	14,737												31.5
1985—I	123,714	11,727	16,278	7,044	7,618	6,206	20,055	15,975	11,504	11,332	15,975	92,105	88,066	83,050	31.4
II	120,201	9,652	14,840												32.3
III	117,415	8,050	13,656												33.0
1990—I	132,058	12,405	20,138	6,615	7,156	5,327	20,073	18,608	12,961	10,780	17,415	98,005	92,890	87,495	32.0
II	125,921	9,797	16,901	6,324											33.5
III	121,291	7,966	14,335	6,000											34.6
2000—I	146,935	12,011	22,380	10,036	9,251	5,857	17,455	21,087	18,294	13,025	18,558	107,430	102,508	95,413	33.1
II	134,973	8,948	17,531	8,173	7,864	5,152	17,361					104,371	100,321	94,308	36.2
III	128,481	6,963	14,106	7,791	6,749	4,539	17,297					101,915	98,529	93,394	38.2
SERIES II-X PROJECTIONS[1]															
1980	220,197	16,877	29,842	15,585	16,896	12,155	35,463	25,415	22,497	20,064	24,502	155,956	137,893	145,187	30.1
1985	229,057	19,113	29,460	14,064	15,089	12,104	38,617	30,630	22,070	21,294	26,593	172,284	166,390	156,290	31.3
1990	237,421	19,194	33,158	12,422	14,034	10,243	39,432	35,290	24,658	20,198	28,795	178,758	172,649	162,048	32.6
2000	249,061	17,048	33,632	15,734	14,993	9,601	32,149	39,170	34,228	22,285	30,223	190,4 8	182,648	171,183	35.4
2025	260,343	17,582	33,281	15,075	14,564	10,125	33,989	36,830	30,658	31,515	45,715	210,5 1	203,405	192,360	37.7
2050	269,909	17,812	32,978	14,774	14,547	10,353	34,574	35,509	32,156	31,492	45,805	211,7 8	204,435	193,440	37.8
Percent distribution in ultimate stationary population	100.0	6.7	12.0	5.3	5.3	4.0	13.1	12.9	12.4	11.3	17.0	78.6	76.0	72.0	37.8

X Not applicable. [1] Series II-X, which would reach zero growth around the middle of the twenty-first century, is one of many possible approaches to zero growth. Immediate cessation of net immigration, combined with replacement level fertility would not lead to immediate zero growth because the U.S. has a relatively young age structure (due to the post-World War II baby boom) which provides momentum for continued growth. Zero growth in 1975 (assuming no dramatic change in mortality) would require an annual total fertility rate of about 1,000 with net immigration at the current level, or about 1,200 with no net immigration. Total fertility rate in 1974 was between 1,800 and 1,900.

Source: U.S. Bureau of the Census, *Current Population Reports*, series P-25, Nos. 310, 311, 519, and 601.

Source: Statistical Abstract of the United States, 1975

TABLE 6-14
POPULATION, BY SEX, RACE, RESIDENCE, AND MEDIAN AGE: 1790 to 1974

No. 26. Population, by Sex, Race, Residence, and Median Age: 1790 to 1974

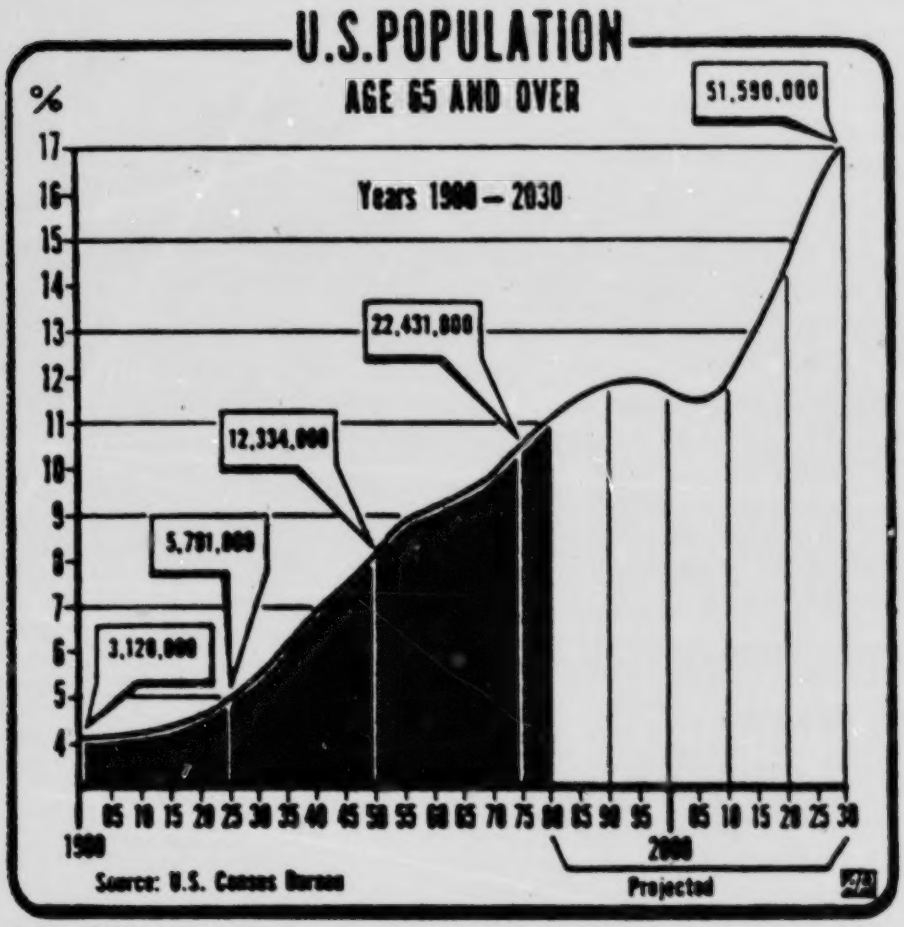
[In thousands, except as indicated. Total resident population excluding Armed Forces abroad. For definition of median, see p. xii. See also *Historical Statistics, Colonial Times to 1970*, series A 73-81 and A 143-149]

Census date	Sex		Race				Residence [1]		Median age (years)		
	Male	Female	White	Negro		Other	Urban	Rural	All classes	White	Negro
				Number	Percent						
CONTERMINOUS U.S.[2]											
1790 (Aug. 2)	(NA)	(NA)	1,172	757	19.3	(NA)	202	3,728	(NA)	(NA)	(NA)
1800 (Aug. 4)	(NA)	(NA)	4,306	1,002	18.9	(NA)	322	4,988	(NA)	16.0	(NA)
1810 (Aug. 6)	(NA)	(NA)	5,862	1,378	19.0	(NA)	525	6,714	(NA)	16.0	(NA)
1820 (Aug. 7)	4,897	4,742	7,867	1,772	18.4	(NA)	693	8,945	16.7	16.8	17.2
1830 (June 1)	6,532	6,334	10,537	2,329	18.1	(NA)	1,127	11,739	17.2	17.2	16.9
1840 (June 1)	8,690	8,381	14,196	2,874	16.9	(NA)	1,845	16,234	17.8	17.9	17.3
1850 (June 1)	11,338	11,354	19,553	3,639	15.7	(NA)	3,544	19,348	18.9	19.2	17.3
1860 (June 1)	16,068	15,358	26,923	4,442	14.1	79	6,217	25,227	19.4	19.7	17.7
1870 (June 1)	19,494	19,068	33,589	4,880	12.7	99	9,902	28,646	20.2	20.4	18.5
1880 (June 1)	25,519	24,537	43,403	6,581	13.1	172	14,130	36,026	20.9	21.4	18.0
1890 (June 1)	32,237	30,711	55,101	7,489	11.9	358	22,106	40,841	22.0	22.5	17.8
1900 (June 1)	38,816	37,178	66,809	8,834	11.6	351	30,160	45,833	22.9	23.4	19.4
1910 (Apr. 15)	47,332	44,640	81,732	9,828	10.7	413	41,999	49,973	24.1	24.5	20.8
1920 (Jan. 1)	53,900	51,810	94,821	10,463	9.9	427	54,158	51,553	25.3	25.6	22.3
1930 (Apr. 1)	62,137	60,638	110,287	11,891	9.7	597	68,955	53,820	26.4	26.9	23.5
1940 (Apr. 1)	66,062	65,608	118,215	12,866	9.8	589	74,424	57,246	29.0	29.5	25.3
1950 (Apr. 1)	74,833	75,864	134,942	15,042	10.0	713	96,468	54,230	30.2	30.8	26.2
1960 (Apr. 1)	87,868	90,800	158,485	18,860	10.6	1,149	124,699	53,766	29.6	30.3	23.6
UNITED STATES											
1960 (Apr. 1)	75,187	76,139	135,150	15,048	9.9	1,131	96,847	54,479	30.2	30.7	26.2
1980 (Apr. 1)	88,331	90,992	158,832	18,872	10.6	1,620	125,269	54,054	29.5	30.3	23.6
1970 (Apr. 1)	98,926	104,309	178,098	22,581	11.1	2,557	149,325	53,887	28.0	28.9	22.4
1971 (July 1)	100,437	105,775	180,408	23,086	11.2	2,718	(NA)	(NA)	28.0	28.8	22.5
1972 (July 1)	101,471	106,759	181,899	23,471	11.3	2,860	(NA)	(NA)	28.2	29.0	22.7
1973 (July 1)	102,229	107,622	183,049	23,801	11.3	3,000	(NA)	(NA)	28.4	29.2	22.9
1974 (July 1)	102,945	108,446	184,109	24,126	11.4	3,155	(NA)	(NA)	28.7	29.5	23.2

NA Not available. [1] Beginning 1950, current definition. For explanation of change, see p. 2.
[2] Excludes Alaska and Hawaii.

Source: U.S. Bureau of the Census, *U.S. Census of Population: 1830*, vol. II; *1940*, vol. II, part 1, and vol. IV, part 1; *1960*, vol. II, part 1; *1960*, vol. I; *1970*, vol. 1, part B; and *Current Population Reports*, series P-25, Nos. 519 and 529.

Source: Statistical Abstract of the United States, 1975



POPULATION OVER 65 UP — This chart, based on information provided by the U.S. Census Bureau, depicts the percentage of the American population that was age 65 and older from 1900 through 1975 and projected percentages from 1980 to 2030. The figures in boxes represent the number of people 65 and over in the years 1900, 1925 and 1975. Projected figures estimate there will be more than 51 million persons in this category by the year 2030. (AP Laserphoto)

Source: Lubbock Avalanche Journal, Thursday Evening, June 3, 1976

Figure 6-2. Total United States population age 65 and over

Capability

A major variable used in the scenarios is called capability referring to society's per capita financial resources available for use in satisfying society's wants and/or needs. The measure chosen for this variable was the per capita net national product. The measure was obtained by dividing the historical NNP (in constant 1972 dollars) by the corresponding total population estimates. The results of these computations are shown in table 6-15. It should be noted that although the per capita NNP was measured as stated above, many of the subvariables within the NNP as previously stated are accumulative type variables adding to the national wealth and as such as available from one period to another.

Table 6-16 provides the data dealing with per capita disposable personal income and per capita personal consumption expenditures. The difference in the amounts between these two variable is made up of private interest payments and private savings.

TABLE 6-15
PER CAPITA NET NATIONAL PRODUCT IN
CONSTANT 1972 DOLLARS 1950 to 1975

Year	Net National Product (Billions)	Total Population (000's)	Per Capita NNP ($)
1950	489.4	152,271	3,214
1955	597.7	165,931	3,602
1960	668.1	180,671	3,698
1965	848.7	194,303	4,368
1970	975.5	204,878	4,761
1975	1,068.6	213,631	5,002
Average Annual % Change From:			
1950-55	4.08	1.73	2.31
1955-60	2.25	1.72	.53
1960-65	4.90	1.47	3.39
1965-70	2.92	1.07	1.74
1970-75	1.89	.84	.99
1950-75	3.17	1.36	1.79

TABLE 6-16
TOTAL AND PER CAPITA DISPOSABLE PERSONAL INCOME AND PERSONAL CONSUMPTION EXPENDITURES IN CURRENT AND AND 1972 DOLLARS 1950-1975

TABLE B-17.—*Total and per capita disposable personal income and personal consumption expenditures in current and 1972 dollars,*

Year or quarter	Disposable personal income				Personal consumption expenditures				Population (thousands)[1]
	Total (billions of dollars)		Per capita (dollars)		Total (billions of dollars)		Per capita (dollars)		
	Current dollars	1972 dollars	Current dollars	1972 dollars	Current dollars	1972 dollars	Current dollars	1972 dollars	
1950	205.5	361.9	1,355	2,386	192.0	338.1	1,266	2,229	151,684
1951	224.8	371.6	1,457	2,408	207.1	342.3	1,342	2,219	154,287
1952	236.4	382.1	1,506	2,434	217.1	350.9	1,383	2,236	156,954
1953	250.7	397.5	1,571	2,491	229.7	364.2	1,439	2,283	159,565
1954	255.7	402.1	1,574	2,476	235.8	370.9	1,452	2,284	162,391
1955	273.4	425.9	1,654	2,577	253.7	395.1	1,535	2,391	165,275
1956	291.3	444.9	1,731	2,645	266.0	406.3	1,581	2,415	168,221
1957	306.9	453.9	1,792	2,650	280.4	414.7	1,637	2,421	171,274
1958	317.1	459.0	1,821	2,636	289.5	419.0	1,662	2,406	174,141
1959	336.1	477.4	1,898	2,696	310.8	441.5	1,755	2,493	177,073
1960	349.4	487.3	1,934	2,697	324.9	453.0	1,798	2,507	180,671
1961	362.9	500.6	1,976	2,725	335.0	462.2	1,824	2,516	183,691
1962	383.9	521.6	2,058	2,796	355.2	482.9	1,904	2,589	186,538
1963	402.8	539.2	2,128	2,849	374.6	501.4	1,979	2,649	189,242
1964	437.0	577.3	2,278	3,009	400.4	528.7	2,087	2,755	191,889
1965	472.2	612.4	2,430	3,152	430.2	558.1	2,214	2,872	194,303
1966	510.4	643.8	2,597	3,274	464.8	586.1	2,365	2,982	196,560
1967	544.5	669.8	2,748	3,371	490.4	603.2	2,468	3,035	198,712
1968	588.1	695.2	2,930	3,464	535.9	633.4	2,670	3,156	200,706
1969	630.4	712.3	3,111	3,515	579.7	655.4	2,860	3,234	202,677
1970	685.9	741.6	3,348	3,619	618.8	668.9	3,020	3,265	204,878
1971	742.8	769.0	3,588	3,714	668.2	691.9	3,227	3,342	207,053
1972	801.3	801.3	3,837	3,837	733.0	733.0	3,510	3,510	208,846
1973	903.1	854.0	4,292	4,068	808.5	766.3	3,843	3,642	210,410
1974	983.6	843.5	4,642	3,981	885.9	759.6	4,181	3,586	211,894
1975 p	1,076.8	857.0	5,040	4,012	963.2	766.6	4,509	3,588	213,631

[1] Population of the United States including Armed Forces overseas; includes Alaska and Hawaii beginning 1960. Annual data are for July 1; quarterly data are for middle of period, interpolated from monthly data.

Source: Department of Commerce (Bureau of Economic Analysis and Bureau of the Census).

Columns 1 2 3 4 5 6 7 8 9

Source: Economic Report of the President, 1976.

Average Annual % Change From:

	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8
1950-55	5.88	3.31	4.07	1.55	5.73	3.16	3.93	1.41
1955-60	5.03	2.73	3.18	.91	5.07	2.77	3.21	.95
1960-65	6.21	4.68	4.67	3.17	5.58	4.26	4.25	2.76
1965-70	7.75	3.90	6.62	2.80	7.54	3.69	6.41	2.60
1970-75	9.44	2.93	8.52	2.08	9.25	2.76	8.35	1.90
1950-75	6.85	3.51	5.39	2.10	6.66	3.33	5.21	1.92

The Work Force and Productivity

The American work force is generally considered to consist of those members of the noninstitutionalized population 16 years of age and older who are employed or are actively seeking employment. Table 6-17 shows that the population 16 years of age and over has been experiencing an average annual change of 1.47 percent during the 1950-75 time frame. It also shows that the total work force has been experiencing an average annual change of 1.59 percent during the same period. Table 6-18 through 6-20 along with figure 6-3 provide data pertaining to the sex and age, compensation of the work force, employment status by sex, the relationship of the work force to the total population and to various age groups within the population. Table 6-21 provides data concerning the productivity and compensation of the employed work force. The data in table 6-22 provides an alternative gross measure of productivity, this being the employed work force's per capita net national product and per capita net national product and per capita national income.

TABLE 6-17
NONINSTITUTIONALIZED POPULATION AND THE WORK FORCE, 1950-1975

Year	Noninstitutional Population 16+	Total Work Force	Work Force % of Population 16+	Armed Forces	Armed Forces % Work Force	Civilian Work Force	Civilian % Work Force	Unemp % Tot. Force
1950	106,645	63,858	59.9	1,650	2.58	62,208	97.42	5.15
1951	107,721	65,117	60.4	3,100	4.76	62,017	95.24	3.16
1952	108,823	65,730	60.4	3,592	5.46	62,138	94.54	2.86
1953	110,601	66,560	60.2	3,545	5.33	63,015	94.67	2.76
1954	111,671	66,993	60.0	3,350	5.00	63,643	95.00	5.27
1955	112,732	68,072	60.4	3,049	4.48	65,023	95.52	4.19
1956	113,811	69,409	61.0	2,857	4.12	66,552	95.88	3.96
1957	115,065	69,729	60.6	2,800	4.02	66,929	95.98	4.10
1958	116,363	70,275	60.4	2,636	3.75	67,639	96.25	6.55
1959	117,881	70,921	60.2	2,552	3.60	68,369	96.40	5.27
1960	119,759	72,142	60.2	2,514	3.48	69,628	96.52	5.34
1961	121,343	73,031	60.2	2,572	3.52	70,459	96.48	6.45
1962	122,981	73,442	59.7	2,828	3.85	70,614	96.15	5.33
1963	125,154	74,571	59.6	2,738	3.67	71,833	96.33	5.46
1964	127,224	75,830	59.6	2,739	3.61	73,091	96.39	4.99
1965	129,236	77,179	59.7	2,723	3.53	74,455	96.47	4.36
1966	131,180	78,893	60.1	3,123	3.96	75,770	96.04	3.64
1967	133,319	80,793	60.6	3,446	4.27	77,347	95.73	3.68
1969	135,562	82,272	60.7	3,535	4.30	78,737	95.70	3.42
1969	137,841	84,240	61.1	3,506	4.16	80,734	95.84	3.36
1970	140,182	85,903	61.3	3,188	3.71	82,715	96.29	4.76
1971	142,596	86,929	61.0	2,817	3.24	84,113	96.76	5.74
1972	145,775	88,991	61.0	2,449	2.75	86,542	97.25	5.44
1973	148,263	91,040	61.4	2,326	2.55	88,714	97.45	4.73
1974	150,827	93,240	61.8	2,229	2.39	91,011	97.61	5.44
1975	153,449	94,793	61.8	2,180	2.30	92,613	97.70	8.26
Average Annual % Change From:								
1950-55	1.12	1.29		13.07	11.67	.89	- .39	-4.04
1955-60	1.22	1.17		-3.79	-4.93	1.38	.21	4.97
1960-65	1.53	1.36		1.61	.29	1.35	-0.00	-3.97
1965-70	1.64	2.17		3.20	1.00	2.13	-0.04	1.77
1970-75	1.82	1.99		-7.32	-9.12	2.29	.29	11.65
1950-75	1.47	1.59	.12	1.12	-.46	1.60	.01	1.91

Source: Economic Report of the President, 1976.

TABLE 6-18
TOTAL POPULATION AND THE WORK FORCE BY FULL TIME EMPLOYED, PART TIME EMPLOYED

				Full Time Employed Work Force (FTEWF)				Part Time Employed Work Force (PTEWF)		% of TPOP	
Year	Total Population (TPOP)	Total Work Force (WF)	WF As % of TPOP	Armed Forces	Civilian Emp	Total FTEWF	As % TPOP	Civilian Emp	As % TPOP	Employed	Unemployed
1963	189,242	74,571	39.41	2,738	60,507	63,245	33.42	7,254	3.83	37.25	2.16
1964	191,889	75,830	39.52	2,739	61,645	64,384	33.55	7,661	3.99	37.54	1.98
1965	194 303	77,178	39.72	2,723	63,138	65,861	33.90	7,952	4.09	37.99	1.73
1966	196,560	78,893	40.14	3,123	64,370	67,493	34.34	8,507	4.33	38.67	1.47
1967	198,712	80,793	40.66	3,446	65,173	68,619	34.53	9,199	4.63	39.16	1.50
1968	200,706	82,272	40.99	3,535	66,195	69,730	34.74	9,726	4.85	39.59	1.40
1969	202,677	84,240	41 56	3,506	67,558	71,064	35.06	10,343	5.10	40.16	1.40
1970	204,878	85,903	41.93	3,188	67,819	71,007	34.66	10,808	5.28	39.94	1.99
1971	207,053	86,929	41 98	2,817	68,130	70,947	34.27	10,990	5.31	39.58	2.40
1972	208,846	88,991	42.61	2,449	70,259	72,708	34.81	11,443	5.48	40.29	2.32
1973	210,410	91,040	43.27	2,326	72,571	74,897	35.60	11,839	5.63	41.23	2.04
1974	211,894	93,240	44.00	2,229	73,866	76,095	35.91	12,070	5.70	41.61	2.39
1975	213,631	94,793	44.37	2,180	--	--	--	--	--	40.71	3.67

Source: Handbook of Labor Statistics, 1976.
-- Not Available

TABLE 6-19
POPULATION AND WORK FORCE PARTICIPATION

Year	Total Population Under 16 Yrs	Total Population 16-64	Total Population 65+	Total Work Force 16+	Total Civilian Work Force 16+	Total Work Force 16-64	Total Work Force 65+	Total Work Force Participation Rates For Age Groups 16+	16-64	65+
1950	43,131	96,743	12,397	63,858	62,208	60,820	3,038	58.5	62.9	24.5
1955	51,248	100,158	14,525	68,072	65,023	64,766	3,306	59.4	64.7	22.8
1960	58,835	105,160	16,675	72,142	69,628	68,948	3,194	59.2	65.6	19.2
1965	62,762	113,090	18,451	77,178	74,455	74,071	3,107	58.7	65.5	16.8
1970	61,922	122,868	20,087	85,903	82,715	82,683	3,220	60.1	67.3	16.0
1975	57,873	133,356	22,400	94,793	92,613	91,854	2,939	60.9	68.9	13.1
Average Annual % Change From:										
1950-55	3.51	.69	3.22	1.29	.89	1.27	1.71	.31	.57	-1.43
1955-60	2.80	.98	2.80	1.17	1.38	1.26	- .69	-.07	.28	-3.38
1960-65	1.30	1.46	2.04	1.36	1.35	1.44	- .55	-.17	-.03	-2.64
1965-70	- .27	1.67	1.71	2.17	2.13	2.22	.72	.47	.54	- .97
1970-75	-1.34	1.65	2.20	1.99	2.29	2.13	-1.81	.26	.47	-3.92
1950-75	1.18	1.29	2.39	1.59	1.60	1.66	- .13	.16	.37	-2.47

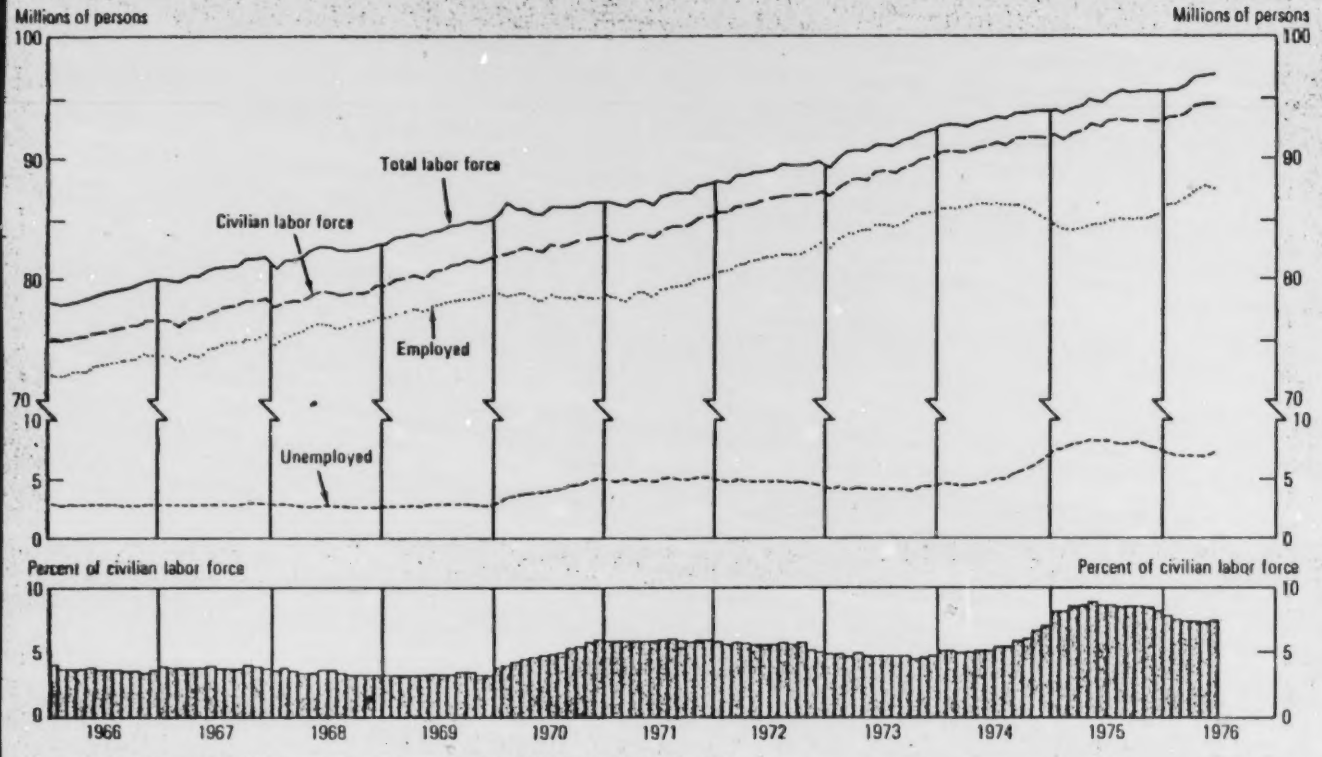
Source: Economic Report of the President, 1976
Handbook of Labor Statistics 1975 and 1976

TABLE 6-20
CIVILIAN EMPLOYMENT AND UNEMPLOYMENT BY
SEX 16 YEARS AND OVER 1950-1975
(THOUSANDS)

Year	Employment			Unemployment		
	Total	Male	Female	Total	Male	Female
1950	58,920	41,580	17,340	3,288	2,239	1,049
1955	62,171	42,621	19,550	2,852	1,854	998
1960	65,778	43,904	21,874	3,852	2,486	1,366
1965	71,088	46,340	24,748	3,366	1,914	1,452
1970	78,624	48,960	29,667	4,088	2,235	1,853
1975	84,763	51,230	33,553	7,830	4,385	3,445
Average Annual % Change From:						
1950-55	1.08	.50	2.43	-2.81	-3.70	- .99
1955-60	1.13	.60	2.27	6.20	6.04	6.48
1960-65	1.56	1.09	2.50	-2.66	-5.10	1.23
1965-70	2.04	1.11	3.69	3.96	3.15	5.00
1970-75	1.52	.91	2.49	13.88	14.43	13.20
1950-75	1.47	.84	2.68	3.53	2.75	4.87

Fig. 12-1. TRENDS IN THE LABOR FORCE: 1966 TO 1976

(See table 671)



Source: Chart prepared by U.S. Bureau of the Census. Data from U.S. Bureau of Labor Statistics.

Source: Statistical Abstract of the United States, 1976

Figure 6-3. Trends in the Labor Force: 1966 to 1976

TABLE 6-21
PRODUCTIVITY AND COMPENSATION 1950-1974
(1967-100)

Year	Output Per Man-Hour				Output Per Employed Person				Compensation Per Man-Hour			Compensation Per Man Hour/Output Per Man-Hour		
	Total Private	Farm	Nonfarm	Manufacturing	Total Private	Farm	Nonfarm	Manufacturing	Total Private	Nonfarm	Manufacturing	Total Private	Nonfarm	Manufacturing
1950	59.8	37.1	65.2	64.4	64.3	39.9	68.8	64.9	43.0	45.5	44.6	71.9	69.8	68.4
1955	70.0	48.5	73.9	73.7	74.0	51.3	77.3	74.4	56.3	59.0	60.0	80.4	79.8	81.4
1960	78.0	64.8	80.1	79.9	80.1	65.2	81.9	79.0	72.3	74.3	76.6	92.7	92.8	95.9
1965	94.2	86.6	95.1	98.4	95.8	87.6	96.5	99.6	88.8	89.6	91.2	94.3	94.2	92.7
1970	104.4	119.6	103.4	107.9	102.1	118.4	101.3	106.4	124.0	122.6	122.1	117.4	118.6	113.2
1974	112.1	138.2	110.6	129.3	108.2	134.2	106.9	127.9	164.2	162.1	161.2	146.5	146.6	124.7
Average Annual % Change From:														
1950-55	3.20	5.51	2.54	2.73	2.85	5.15	2.36	2.77	5.55	5.33	6.11	2.26	2.71	3.54
1955-60	2.19	5.97	1.62	1.63	1.60	4.91	1.16	1.21	5.13	4.72	5.01	2.89	3.06	3.33
1960-65	3.85	5.97	3.49	4.36	3.64	6.08	3.34	4.74	4.20	3.82	3.55	.34	3.00	-.68
1965-70	2.08	6.67	1.69	1.76	1.28	6.21	.98	1.33	6.91	6.47	6.01	4.48	4.71	4.08
1970-74	1.79	3.68	1.70	4.63	1.46	3.18	1.35	4.71	7.27	7.23	7.19	5.69	5.44	2.45
1950-74	2.65	5.63	2.23	2.95	2.19	5.18	1.85	2.87	5.74	5.44	5.50	3.01	3.14	2.53

Source: Handbook of Labor Statistics, 1975

TABLE 6-22
EMPLOYED WORK FORCE, PER CAPITA NATIONAL PRODUCT AND PER CAPITA NATIONAL INCOME

Year	(Billions) Net National Product (NNP)	(Dollars) Emp WF Per Capita Net Nat'l Product	(Thousands) Armed Forces & Civilian Employed Workforce	(Billions) National Income (NI)	(Dollars) Emp WF Per Capita National Income
1950	489.4	8,079	60,570	440.7	7,275
1951	529.0	8,388	63,062	476.0	7,548
1952	548.5	8,590	63,847	493.6	7,730
1953	568.9	8,789	64,726	509.7	7,874
1954	559.1	8,810	63,461	501.8	7,907
1955	597.7	9,164	65,220	538.6	8,258
1956	608.0	9,134	66,559	552.4	8,299
1957	616.6	9,220	66,870	557.2	8,332
1958	613.3	9,338	65,673	551.5	8,397
1959	652.4	9,711	67,181	588.3	8.756
1960	668.1	9,783	68,290	600.6	8,794
1961	685.3	10,031	68,317	613.0	8,972
1962	728.1	10,471	69,521	648.8	9,331
1963	757.7	10,747	70,501	674.3	9,564
1964	799.5	11,097	72,044	714.2	9,913
1965	848.7	11,498	73,812	761.8	10,328
1966	900.1	11,840	76,018	810.2	10,658
1967	923.2	11,863	77,818	830.1	10,667
1968	962.1	12,108	79,455	864.9	10,885
1969	982.8	12,072	81,408	884.7	10,867
1970	975.5	11,923	81,815	873.5	10,667
1971	1,004.9	12,264	81,936	893.9	10,909
1972	1,065.8	12,665	84,151	951.9	11,311
1973	1,124.1	12,960	86,736	1,008.8	11,630
1974	1,100.2	12,479	88,164	986.3	11,187
1975	1,068.6	12,287	86,966	959.9	11,037
Average Annual % Change From:					
1950-55	4.08	2.55	1.49	4.09	2.57
1955-60	2.25	1.32	.92	2.20	1.27
1960-65	4.90	3.28	1.57	4.87	3.27
1965-70	2.82	.73	2.08	2.77	.65
1970-75	1.84	.60	1.23	1.90	.68
1950-75	3.17	1.69	1.46	3.27	1.68

Source: Economic Report of the President, 1976.

Government Receipts and Expenditures

A major variable used in the development of scenarios was referred to a society's willingness to address societal problems through the public sector. This variable was measured by the amount of of total government spending as a percent of the total NNP. The data, in constant 1972 dollars, pertaining to this variable is contained in table 6-23. The data shows that in 1950 total government expenditures were 23.3 percent of the NNP, whereas in 1975 total government expenditures amounted to 39.0 percent of the NNP. The average annual percent change of total government spending as a percent of NNP has been 2.08 percent per year. Thus, even though total NNP and total government spending have been increasing, government spending has been increasing faster than the NNP. If this percentage increase were to continue unabated for the next 25 years, total government expenditures would constitute 65.25 percent of the NNP by the year 2000 regardless of the growth in NNP.

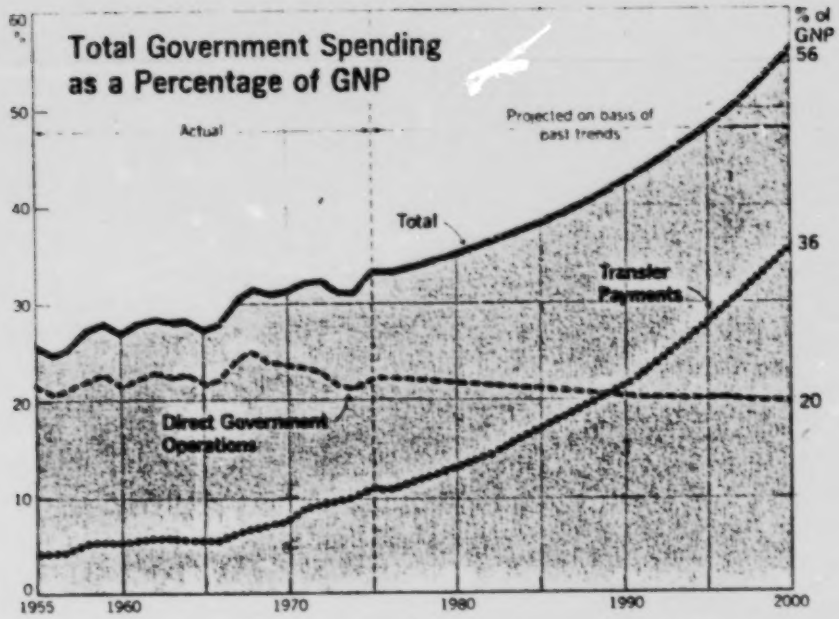
TABLE 6-23

FEDERAL, STATE AND LOCAL GOVERNMENT RECEIPTS AND EXPENDITURES BY TOTAL GOVERNMENT, FEDERAL GOVERNMENT AND STATE AND LOCAL GOVERNMENT FROM 1950-1975 IN CONSTANT 1972 DOLLARS (BILLIONS)

	Total Government			Federal Government			State and Local Government		
Year	Receipts	Expenditures	Surplus or Deficit	Receipts	Expenditures	Surplus or Deficit	Receipts	Expenditures	Surplus or Deficit
1950	128.7	113.8	14.9	93.8	76.1	17.2	39.7	42.0	-2.2
1955	166.0	160.9	5.1	119.2	111.8	7.2	52.1	54.0	-2.1
1960	203.4	198.8	4.5	140.1	135.7	4.4	72.7	72.6	.1
1965	253.4	252.8	.7	167.3	166.6	.7	101.1	101.1	0.0
1970	331.1	341.2	-10.3	210.2	223.4	-13.2	147.6	144.6	3.1
1975	366.4	416.8	-50.4	225.0	283.3	-58.3	184.4	176.5	7.9
Above Amounts as % of Net National Product (NNP) in 1972 Dollars									
1950	26.3	23.3	3.0	19.1	15.6	3.5	8.1	8.6	-0.5
1955	27.8	26.9	0.9	19.9	18.7	1.2	8.7	9.0	-0.4
1960	30.4	29.8	0.6	21.0	20.3	.7	10.9	10.9	0.0
1965	29.9	29.8	0.1	19.7	19.6	0.1	11.9	11.9	0.0
1970	33.9	35.0	-1.1	21.5	22.9	-1.4	15.1	14.8	.3
1975	34.3	39.0	-4.7	21.1	26.5	-5.5	17.3	16.5	.7
Average Annual % Change in Government Spending as % of Net National Product From:									
1950-55	1.12	2.92		.82	3.69		1.44	.91	
1955-60	1.80	2.07		1.08	1.66		4.61	3.91	
1960-65	- .33	0.00		-1.27	- .70		1.77	1.77	
1965-70	2.54	3.27		1.76	3.16		4.88	4.46	
1970-75	.23	2.19		- .37	2.96		2.76	2.20	
1950-75	1.07	2.08		.40	2.14		3.08	2.64	

NOTE: Federal grants - in aid to state and local governments are reflected in federal expenditures and state and local receipts and expenditures. Total government recepits and expenditures have been adjusted to eliminate this duplication.

Source: Economic Report of the President, 1976



This graph nominally shows the rising share of the nation's total output of goods and services represented by government outlays at all levels—federal, state and local. In reality, however, the graph should be viewed as tracing the end of the private enterprise system in America. Government's share of GNP has grown from about 25% in 1955 to over 36% today (it was 12% in 1930) and threatens to top 50% before the end of this century . . . unless action can be taken to slow the explosive growth in "income transfer" payments—in government's redistribution of income from the most productive sectors of the economy to the least productive.

Source: National Association of Manufactures (NAM) Representative, February 9, 1976.

Figure 6-4. Total government spending as percentage of gross national product

Government Spending for Social Needs

Total government spending for social needs was an additional societal variable used in the development of the scenarios. The data in table 6-24 provides an overview of total government spending and a breakdown of this spending by category in both current and constant 1972 dollars. Table 6-25 shows, in current dollars, the major subcategories used in developing the measure of total government spending for social needs within this TA. Table 6-26 presents this data in constant 1972 dollars. Those government expenditures not listed in tables 6-25 and 6-26 are included within the category referred to as total government spending for other needs within the social context papers.

The data in table 6-27 provides a recap of federal grants to state and local governments by purpose in current dollars.

TABLE 6-24

TOTAL GOVERNMENT SPENDING GOVERNMENT SPENDING FOR SOCIAL NEEDS IN CURRENT AND CONSTANT 1972 DOLLARS AND THE RELATIONSHIP OF TOTAL GOVERNMENT SPENDING AND GOVERNMENT SPENDING FOR SOCIAL NEEDS AS % OF GROSS NATIONAL PRODUCT (GNP), NET NATIONAL PRODUCED (NNP) AND NATIONAL INCOME (NI)(BILLIONS)

	Current Dollars									Constant 1972 Dollars		
				Total Government Spending as % of			Government Spending for Social Needs As % of					
Year	Total Gov't Spending	Total Gov't Spending for Social Needs	Total Gov't Spending for Other Needs	GNP	NNP	NI	GNP	NNP	NI	Total Gov't Spending	Total Gov't Spending for Social Needs	Total Gov't Spending for Other Needs
1950	61.0	23.5	37.5	21.3	23.3	25.8	8.2	9.0	9.9	113.8	43.8	70.0
1955	98.0	32.6	65.4	24.5	26.9	29.9	8.2	9.0	9.9	160.9	53.5	107.4
1960	136.4	52.3	84.1	27.0	29.8	33.1	10.3	11.4	12.7	198.8	76.2	122.6
1965	187.8	77.3	110.6	27.3	29.8	33.2	11.2	12.2	13.6	252.8	103.9	148.9
1970	311.9	145.8	166.1	31.7	35.0	39.1	14.8	16.4	18.3	341.2	159.5	181.7
1975	525.1	286.5	238.6	35.0	39.0	43.4	19.1	21.3	23.7	416.8	227.4	189.4
Average Annual % Change From:												
1950-55	9.95	6.77	11.77	2.84	2.92	2.99	0.00	0.00	0.00	7.17	4.09	8.94
1955-60	6.84	9.91	5.16	1.96	2.07	2.05	4.67	4.84	5.11	4.32	7.30	2.68
1960-65	6.60	8.10	5.63	.22	0.00	.06	1.69	1.37	1.38	4.92	6.38	3.50
1965-70	10.68	13.56	8.47	3.03	3.27	3.33	5.73	6.10	6.12	6.18	8.95	4.53
1970-75	10.98	14.47	7.51	2.00	2.19	2.11	5.23	5.37	5.31	4.08	7.36	.83
1950-75	8.99	10.52	7.68	2.01	2.08	2.10	3.44	3.51	3.55	5.33	6.80	4.06

Source: Statistical Abstract of the United States, 1976; Government Spending for Social Needs; Economic Report of the President, 1976.

TABLE 6-25
TOTAL GOVERNMENT SOCIAL WELFARE EXPENDITURES 1950-1975
(IN MILLIONS)

Year	Total Social Welfare	Social Insurance[1]	Public Aid	Health, Medical Programs[2]	Veterans Programs	Education	Housing	Other Social Welfare	All Health, Medical Care[3]
1950	23,508	4,947	2,496	2,064	6,866	6,674	15	448	3,065
1955	32,640	9,835	3,003	3,103	4,834	11,157	89	619	4,421
1960	53,293	19,307	4,101	4,464	5,479	17,626	177	1,139	6,395
1965	77,175	28,123	6,283	6,246	6,031	28,108	318	2,066	9,535
1970	145,761	54,691	16,488	9,753	9,078	50,905	701	4,145	25,237
1975	286,547	123,444	40,536	16,636	16,661	78,438	2,954	7,878	49,947
Average Annual % Change From:									
1950-55	6.78	14.73	3.77	8.50	-6.78	10.82	42.78	6.68	7.60
1955-60	9.89	14.44	6.43	7.54	2.54	9.58	14.74	12.97	7.66
1960-65	8.10	7.81	8.91	6.95	1.94	9178	12.43	12.65	8.32
1965-70	13.56	14.23	21.28	9.32	8.52	12.61	17.13	14.94	21.49
1970-75	14.48	17.68	19.71	11.27	12.71	9.03	33.33	13.70	14.63
1950-75	10.52	13.73	11.80	8.71	3.61	10.36	23.53	12.15	11.81

[1] Exclude expenditures within foreign countries for education, veterans payments, OASDHI, and civil service retirement benefits.

[2] Includes housing and other social welfare not shown separately.

[3] Combines health and medical programs with medical services provided in a connection with social insurance, public aid, veterans, vocational rehabilitation, and antipoverty programs.

Source: U.S. Social Security Administration, Social Security Bulletin, January 1976.

TABLE 6-26

TOTAL GOVERNMENT SOCIAL WELFARE EXPENDITURE IN CONSTANT 1972 DOLLARS 1950-1975 (IN MILLIONS)

Year	Total Social Welfare	Social Insurance[1]	Public Aid	Health Medical Programs[2]	Veterans Programs	Education	Housing	Other Social Welfare	All Health Medical Care[3]
1950	43,858	9,229	4,657	3,851	12,810	12,451	28	836	5,718
1955	53,596	16,149	4,931	5,095	7,938	18,320	146	1,016	7,259
1960	76,229	28,144	5,978	6,507	7,987	25,694	258	1,660	9,322
1965	103,869	37,851	8,456	8,406	8,117	37,830	428	2,781	12,833
1970	159,476	59,837	18,039	10,671	9,932	55,695	767	4,535	27,613
1975	227,418	97,971	32,171	13,203	13,223	62,252	2,344	6,252	39,640
Average Annual % Change From:									
1950-55	4.09	11.83	1.15	5.76	-9.13	8.03	39.18	3.99	4.89
1955-60	7.30	11.75	3.93	5.01	.12	7.00	12.04	10.31	5.13
1960-65	6.30	6.11	7.18	5.25	.32	8.04	10.65	10.86	6.60
1965-70	8.95	9.59	16.36	4.89	4.12	8.04	12.37	10.28	16.56
1970-75	7.36	10.36	12.27	4.35	5.89	2.25	25.04	6.63	7.50
1950-75	6.80	9.91	8.04	5.05	.13	6.65	19.38	8.38	8.05

[1]Excludes expenditures within foreign countries for education, veterans payments, OASDHI, and civil service retirement benefits.

[2]Including housing and other social welfare not shown separately.

[3]Combines health and medical programs with medical serviced provided in connection with social insurance, public aid, veterans, vocational rehabilitation, and antipoverty programs.

Source: U.S. Social Security Administration, Social Security Bulletin, January, 1976.

TABLE 6-27
FEDERAL GRANTS TO STATE AND LOCAL GOVERNMENTS BY PURPOSE
1950 to 1975

All Grants (Millions)			Social Welfare (Millions Except Percent)							Other Categories		
Year	Total	Per Capita[1]	Total	% Total Grants	Public Assistance[2]	Health[3]	Education[4]	Economic opportunity Man-Power[5]	Misc[6]	Highways	General Revenue	All Other
1950	2,212	14	1,731	78.2	1,123	123	82	-	402	462	(X)	20
1955	3,096	18	2,403	77.6	1,427	119	296	-	501	605	(X)	89
1960	6,838	38	3,610	52.8	2,059	214	441	-	896	2,999	(X)	229
1965	10,630	55	5,669	53.3	3,059	346	702	527	1,033	4,088	(X)	873
1970	23,575	115	16,545	70.2	7,445	1,043	3,016	2,565	2,476	4,475	(X)	2,556
1975	48,510	228	30,216	62.3	13,959	1,892	4,671	4,815	4,879	4,995	6,130	7,169
Average Annual % Change From:												
1950-55	6.96	5.2	6.78	- .2	4.91	- .66	29.27	-	6.89	5.54	-	34.79
1955-60	17.17	16.1	8.48	-7.4	7.61	12.45	8.30	-	9.92	37.73	-	20.81
1960-65	9.22	7.7	9.45	1.8	8.24	10.09	9.74	-	2.89	6.39	-	30.69
1965-70	17.27	15.9	23.89	5.7	19.47	24.69	33.85	37.23	19.11	1.83	*	23.97
1970-75	15.52	14.7	12.80	-2.4	13.40	12.65	9.14	13.42	14.42	2.22	*	22.91
1950-75	13.15	11.8	12.12	- .9	10.61	11.55	17.55	24.76	10.50	9.99	*	26.53

TABLE 6-27

FEDERAL GRANTS TO STATE AND LOCAL GOVERNMENTS, BY PURPOSE 1950 to 1975 (Continued)

- Represents zero. X Not applicable. *Not computed, program in existance less than 5 years.

[1]Based on Bureau of the Census July 1 population estimates, excl. Armed Forces abroad.

[2]Old-age assistance, medical assistance for the aged, aid to families with dependent children, aid to the blind, aid to permanently and totally disabled, the combined adult assistance program, and medical assistance through December 31, 1973; thereafter, excludes adult cash assistance programs of old age assistance, aid to blind, aid to disabled, and combined adult assistance in the 50 States and D.C.

[3]Maternal and child health services, services for crippled children, general public health services, Indian health, and construction.

[4]Colleges of agriculture and mechanic arts; agricultural extension; agricultural experiment stations through 1968; vocational education; education of handicapped; maintenance and operation of schools; school construction; defense educational activities; educational TV through 1960; elementary, secondary, and higher education activities; child development and others.

[5]Manpower development and training, economic opportunity activities, employment security administration, and public employment.

[6]Vocational rehabilitation, State soldiers' homes, child welfare services, national school lunch and special milk programs, public housing contributions, and others.

*General revenue sharing began in 1973. Initial funding was for 6,636 million dollars in 1973. This amount was reduced an average of 3.89 percent per year to 6,130 million dollars in 1975.

Source: Statistical Abstract of the United States, 1976

Health and Disability Related Expenditures

Health and disability related expenditures, although constituting a very important societal variable was not used as a major scenario variable. This was done to allow the quantitative measure of this variable to fluctuate within each scenario, whereas the major scenario variables were projected as "givens" within each scenario.

The data in tables 6-28 through 6-35 and figures 6-5 and 6-6 provide an overview of the sources of funds, the types of expenditures and the measure of the expenditures in current dollars.

TABLE 6-28
SELECTED PUBLIC EXPENDITURES RELATED TO HEALTH AND DISABILITIES
(IN MILLIONS)

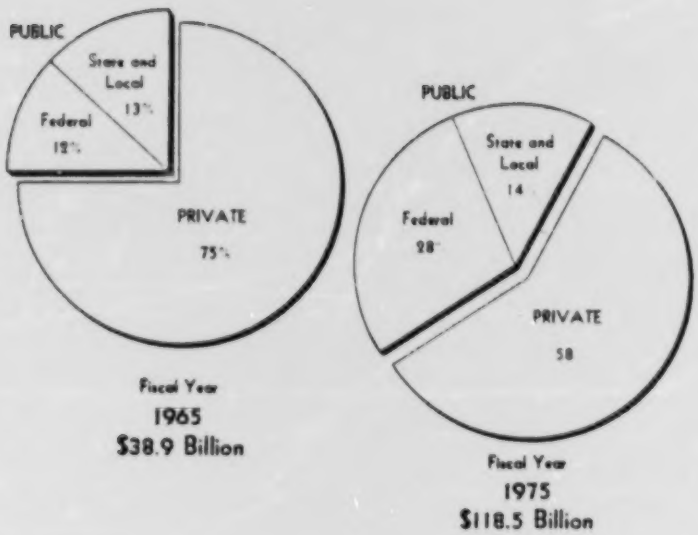
	Health and Medical Programs		Veteran's Programs		Other Social Welfare					
Year	Maternal and Child Health Programs	Medical Research	Medical and Prosthetic Research	Welfare and Other	Vocational Rehabilitation	Institutional Care	Child Nutrition	Child Welfare	Special OEO and Action Programs	Social Insurance Workman's Compensation
1950	29.8	69.2	3.7	858.3	30.0	145.5	160.2	104.9	7.1	625.1
1955	92.9	132.8	5.6	186.5	42.4	195.3	239.6	135.1	6.5	943.0
1960	141.3	448.9	15.1	218.8	96.3	420.5	398.7	211.5	12.4	1,308.5
1965	227.3	1,165.2	36.9	185.8	210.5	789.5	617.4	354.3	42.3	1,859.4
1970	431.4	1,561.4	61.8	379.4	703.8	201.7	896.0	585.3	1,005.6	2,950.4
1975	540.0	2,424.0	91.0	637.0	950.0	301.8	2,517.7	480.0	3,035.7	6,437.5
Average Annual % Growth From:										
1950-55	25.53	13.92	8.64	-26.31	7.16	6.06	8.38	5.19	-1.75	8.57
1955-60	8.75	27.58	21.94	3.25	17.83	16.58	10.72	9.38	13.79	6.77
1960-65	9.97	21.02	19.57	- 3.22	16.93	13.43	9.14	10.87	27.82	7.28
1965-70	13.67	6.03	10.86	15.35	27.30	-23.88	7.73	10.56	88.46	9.67
1970-75	4.59	9.20	8.05	10.92	6.18	8.39	22.95	-3.89	24.65	16.89
1950-75	12.29	15.29	13.67	- 1.19	14.82	2.96	11.65	6.27	27.40	9.78

Source: Social Security Bulletin, January, 1976, Volume 39, Number 1

TABLE 6-29
HEALTH AND MEDICAL CARE: PRIVATE EXPENDITURES AND EXPENDITURES UNDER PUBLIC PROGRAMS SELECTED FISCAL YEARS 1950-1975 (IN MILLIONS)

Year	Private Expenditures	Public Expenditures	Total Expenditures	Total Expenditures as % NNP	Public Expenditures as % of Total Expenditures
1950	8,962.0	3,065.3	12,027.3	4.59	25.5
1955	12,909.0	4,420.6	17,329.6	4.76	25.5
1960	19,461.0	6,395.2	25,856.2	5.64	24.7
1965	29,357.0	9,535.3	38,892.3	6.17	24.5
1970	43,964.0	25,237.1	69,201.1	7.76	36.5
1975	68,552.0	49,947.3	118,499.3	8.80	42.1
Average Annual % Change From:					
1950-55	7.57	7.60	7.58	.73	-0-
1955-60	8.56	7.67	8.33	3.45	-.64
1960-65	8.57	8.32	8.51	1.81	-.16
1965-70	8.41	21.49	12.21	4.69	8.30
1970-75	9.29	14.63	11.36	2.55	2.90
1950-75	8.48	11.81	9.58	2.63	2.03

Source: Social Security Bulletin, January 1976, Volume 39, Number 1



Source: Special Analysis--Budget of the United States Government Fiscal Year 1977.

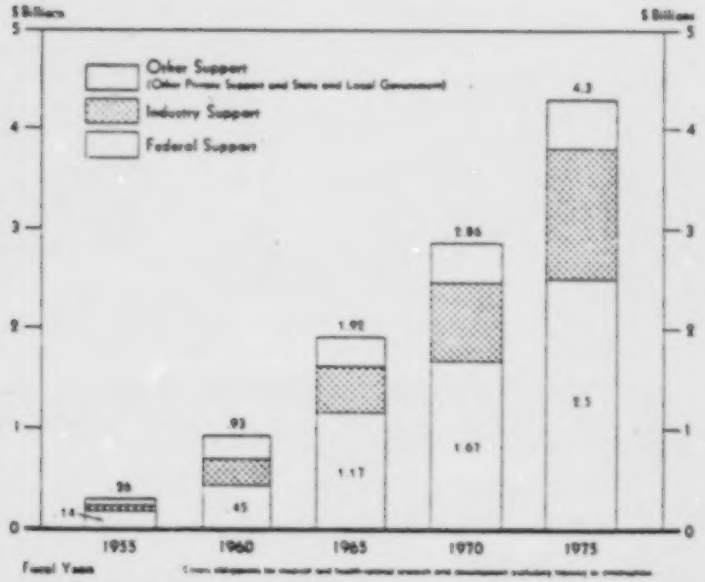
Figure 6-5. Public and private expenditures for health care by source of funding

TABLE 6-30
PUBLIC REHABILITATION EXPENDITURES FROM
FEDERAL TRUST FUNDS (IN THOUSANDS)

Year	Old Age Survivors Insurance Trust Fund*	Disability Insurance Trust Fund		
		Cash Benefits	Rehabilitation Services	Net Administrative Expenses
1966	--	1,721,133	1,493	183,479
1967	88	1,860,789	6,534	98,834
1968	277	2,088,352	15,393	112,336
1969	1,806	2,443,437	14,891	133,495
1970	1,239	2,778,118	16,487	149,020
1971	1,859	3,381,448	21,242	189,875
1972	1,555	4,045,895	27,523	211,671
1973	2,470	5,161,840	39,361	246,649
1974	3,873	6,158,569	49,670	254,266
1975	7,731	7,629,796	70,936	252,985

Source: Social Security Bulletin, January, 1976, Volume 39, Number 1.

*Only those expenditures from the Old Age Survivors Insurance trust fund specifically identified as rehabilitation expenditures are presented here. Income support or income maintenance expenditures are not included.



Source: Special Analysis-Budget of the U.S. Government-Fiscal Year 1977.

Figure 6-6. Funds for medical research and development

TABLE 6-31
FEDERAL OUTLAYS FOR HEALTH RESEARCH AND RESEARCH FACILITIES
(in millions of dollars)

	Outlays			
	1975 actual	1976 estimate	TQ estimate	1977 estimate
Cancer	499	572	128	666
Cardiovascular	266	286	62	311
Mental health	110	127	26	113
Neurological and visual	155	174	50	188
Population and family planning	58	73	18	65
Environmental health	300	408	122	528
Aging	53	49	13	63
Metabolic diseases	137	197	32	188
Child health	72	105	25	96
Infectious diseases	150	153	57	160
Pulmonary	48	53	12	56
Dental	42	46	10	57
Health services research and development	79	65	32	51
Other research and development	507	519	123	507
Research facilities	80	36	5	26
Total	2,539	2,862	716	3,074

Source: Special Analysis-Budget of the U.S. Government-Fiscal Year 1977.

TABLE 6-32

FEDERAL OUTLAYS FOR MEDICAL AND HEALTH-RELATED ACTIVITIES BY AGENCY, 1975 (in millions of dollars)

	Functional code	Health research	Training and education	Construction	Health planning activities	Direct Federal hospital and medical services	Indirect Federal hospital and medical services	Prevention and control of health problems	Total
Department of Health, Education, and Welfare (total)	550	1,867	928	542	162	255	23,002	639	27,396
Health Services Administration	551	9	39	48	11	208	578	153	1,035
Health Resources Administration	550	58	528	369	126	.....	6	12	1,099
Alcohol, Drug Abuse, and Mental Health Administration	550	114	152	31	.....	43	515	96	950
Center for Disease Control	553	42	2	.....	.....	.....	.....	111	154
National Institutes of Health	550	1,598	177	82	.....	.....	.....	33	1,889
Food and Drug Administration	553	27	.....	1	.....	.....	.....	172	201
Assistant Secretary for Health	550	4	.....	2	21	4	11	2	45
Social Security Administration	551	.....	.....	.....	.....	.....	14,781	.....	14,781
Social and Rehabilitation Service	551	2	.....	.....	1	1	6,876	.....	6,879
Other HEW	550	13	42	9	3	.....	235	59	361
Department of Defense	051	104	231	96	.....	2,261	567	26	3,285
Veterans Administration	703	93	198	122	22	3,088	211	.....	3,665
Department of Housing and Urban Development	451	.....	.....	164	38	.....	1	.....	203
Department of Agriculture	350	47	.....	1	.....	.....	.....	259	307
Environmental Protection Agency	304	20	.....	.....	.....	.....	.....	.....	20
National Aeronautics and Space Administration	250	59	.....	.....	.....	.....	.....	3	62
Energy Research and Development Administration	251	143	.....	6	.....	.....	.....	95	244
Department of Labor	553	1	9	.....	.....	.....	.....	81	91
Department of State	150	.....	7	.....	12	.....	1	24	44
National Science Foundation	250	44	.....	.....	.....	.....	.....	.....	44
Department of the Interior	300	35	.....	3	.....	.....	8	2	48
Department of Transportation	400	15	2	.....	10	9	.....	23	60
Department of Justice	750	.....	.....	3	.....	23	3	3	32
Other agencies		31	8	13	71	.....	40	77	239
Agency contributions to employee health funds	551	.....	.....	.....	.....	.....	1,050	.....	1,050
Total outlays for health, 1975		2,459	1,384	949	316	5,567	24,883	1,232	36,790

Source: Special Analysis--Budget of the United States Government, Fiscal Year 1977.

TABLE 6-33

FEDERAL OUTLAYS FOR MEDICAL AND HEALTH-RELATED ACTIVITIES BY AGENCY, 1976 (in millions of dollars)

	Functional code	Health research	Training and education	Construction	Health planning activities	Direct Federal hospital and medical services	Indirect Federal hospital and medical services	Prevention and control of health problems	Total
Department of Health, Education, and Welfare (total)	550	2,109	939	512	160	280	27,047	664	31,711
Health Services Administration	551	14	32	80	12	222	712	144	1,217
Health Resources Administration	550	33	558	340	116	.....	5	9	1,062
Alcohol, Drug Abuse, and Mental Health Administration	550	134	127	36	.....	53	425	105	880
Center for Disease Control	553	43	1	.....	.....	.....	.....	113	157
National Institutes of Health	550	1,837	173	47	.....	.....	.....	39	2,095
Food and Drug Administration	553	28	.....	3	.....	.....	.....	191	222
Assistant Secretary for Health	550	7	.....	1	25	5	16	5	59
Social Security Administration	551	.....	.....	.....	.....	.....	17,433	.....	17,433
Social and Rehabilitition Service	551	1	.....	.....	.....	1	8,220	.....	8,222
Other HEW	550	13	47	5	6	.....	235	59	365
Department of Defense	051	114	249	171	.....	2,404	549	29	3,517
Veterans Administrations	703	97	253	191	23	3,326	251	.....	4,142
Department of Housing and Urban Development	451	.....	.....	168	23	.....	14	5	209
Department of Agriculture	350	59	.....	6	.....	.....	.....	286	351
Environmental Protection Agency	304	63	.....	.....	.....	.....	.....	.....	63
National Aeronautics and Space Administration	250	67	.....	.....	.....	.....	.....	3	70
Energy Research and Development Administration	251	173	.....	10	.....	.....	.....	117	300
Department of Labor	553	3	14	.....	.....	.....	.....	103	119
Department of State	150	.....	8	.....	13	.....	1	27	49
National Science Foundation	250	43	.....	.....	.....	.....	.....	.....	43
Department of the Interior	300	39	.....	4	.....	.....	9	2	54
Department of Transportation	400	24	2	1	8	10	.....	26	70
Department of Justice	750	2	.....	2	.....	24	4	3	36
Other agencies		35	13	15	109	.....	46	84	302
Agency contributions to employee health funds	551	.....	.....	.....	.....	.....	1,450	.....	1,450
Total outlays for health, 1976		2,826	1,477	1,082	336	6,046	29,370	1,349	42,486

Source: Special Analysis--Budget of the United States Government, Fiscal Year 1977.

6-65

TABLE 6-34

FEDERAL OUTLAYS FOR MEDICAL AND HEALTH-RELATED ACTIVITIES BY AGENCY, TRANSITION QUARTER

(In millions of dollars)

	Functional code	Health research	Training and education	Construction	Health planning activities	Direct Federal hospital and medical services	Indirect Federal hospital and medical services	Prevention and control of health problems	Total
Department of Health, Education, and Welfare (total)	550	517	180	74	41	83	7,059	140	8,095
Health Services Administration	551	3	9	17	3	65	181	26	306
Health Resources Administration	550	25	118	41	31	.....	2	2	218
Alcohol, Drug Abuse, and Mental Health Administration	550	30	17	6	.....	17	75	25	170
Center for Disease Control	553	16	.....	.....	.....	.....	.....	31	47
National Institutes of Health	550	434	28	8	.....	.....	.....	6	476
Food and Drug Administration	553	7	.....	1	.....	.....	.....	49	57
Assistant Secretary for Health	550	1	.....	.....	6	1	5	1	15
Social Security Administration	551	.....	.....	.....	.....	.....	4,562	.....	4,562
Social and Rehabilitation Service	551	.....	.....	.....	.....	.....	2,230	.....	2,230
Other HEW	550	.....	7	1	1	.....	4	.....	14
Department of Defense	051	29	67	26	.....	603	135	8	867
Veterans Administration	703	25	65	74	6	795	61	.....	1,026
Department of Housing and Urban Development	451	.....	.....	54	.....	.....	6	2	62
Department of Agriculture	350	15	.....	3	.....	.....	.....	80	98
Environmental Protection Agency	304	16	.....	.....	.....	.....	.....	.....	16
National Aeronautics and Space Administration	250	20	.....	.....	.....	.....	.....	1	21
Energy Research and Development Administration	251	51	.....	3	.....	.....	.....	31	85
Department of Labor	553	1	3	.....	.....	.....	.....	28	31
Department of State	150	.....	4	.....	11	.....	.....	22	37
National Science Foundation	250	11	.....	.....	.....	.....	.....	.....	11
Department of the Interior	300	10	.....	.....	.....	.....	2	.....	13
Department of Transportation	400	10	.....	.....	2	2	.....	4	19
Department of Justice	750	.....	.....	.....	.....	6	1	1	9
Other agencies	.....	6	3	6	23	1	10	20	66
Agency contributions to employee health funds	551	.....	.....	.....	.....	.....	405	.....	406
Total outlays for health, transition quarter		711	322	240	83	1,490	7,679	337	10,862

Source: Special Analysis--Budget of the United States Government, Fiscal Year 1977.

TABLE 6-35

FEDERAL OUTLAYS FOR MEDICAL AND HEALTH-RELATED ACTIVITIES BY AGENCY, 1977 (in millions of dollars)

	Functional code	Health research	Training and education	Construction	Health planning activities	Direct Federal hospital and medical services	Indirect Federal hospital and medical services	Prevention and control of health problems	Total
Department of Health, Education, and Welfare (total)	550	2,187	656	360	213	204	29,634	531	33,792
Health Services Administration	551	2	23	56	10	143	608	104	946
Health Resources Administration	550	26	388	241	151	.....	4	8	819
Alcohol, Drug Abuse, and Mental Health Administration	550	128	62	27	.....	55	343	72	687
Center for Disease Control	553	38	1	.....	.....	.....	.....	88	127
National Institutes of Health	550	1,955	151	38	.....	.....	.....	44	2,188
Food and Drug Administration	553	29	.....	4	.....	.....	.....	194	227
Assistant Secretary for Health	550	8	1	1	46	5	8,980	20	9,062
Social Security Administration	551	.....	.....	.....	.....	.....	19,646	.....	19,646
Social and Rehabilitation Service	551	1	.....	.....	1	1	34	.....	37
Other HEW	550	.....	30	1	5	.....	18	.....	53
Department of Defense	051	125	246	325	.....	2,512	585	47	3,841
Veterans Administration	703	97	271	308	23	3,532	301	.....	4,521
Department of Housing and Urban Development	451	.....	.....	265	.....	.....	33	11	308
Department of Agriculture	350	60	.....	5	.....	.....	.....	307	371
Environmental Protection Agency	304	80	.....	.....	.....	.....	.....	.....	80
National Aeronautics and Space Administration	250	72	.....	.....	.....	.....	.....	4	76
Energy Research and Development Administration	251	253	1	19	.....	.....	.....	142	415
Department of Labor	553	6	20	.....	.....	.....	.....	99	125
Department of State	150	.....	8	.....	17	.....	1	34	59
National Science Foundation	250	49	.....	.....	.....	.....	.....	.....	49
Department of the Interior	300	40	.....	2	.....	.....	9	2	53
Department of Transportation	400	48	2	1	9	21	.....	20	101
Department of Justice	750	2	.....	2	.....	26	4	3	37
Other agencies		29	14	15	148	.....	37	70	312
Agency contributions to employee health funds	551	.....	.....	.....	.....	.....	1,793	.....	1,793
Total outlays for health, 1977		3,048	1,217	1,309	409	6,285	32,396	1,270	45,935

Source: Special Analysis--Budget of the United States Government, Fiscal Year 1977.

Public and Private Programs Used to Assist the Disabled

The definitions contained in table 6-36 are those definitions that have been previously used to identify the members of the disabled population. An individual's eligibility for entrance to many public programs may be determined by definitions similar to the ones presented.

Table 6-37 provides an extensive list of both public and private programs applicable to the disabled as well as others. Tables 6-38 through 6-40 present a recap of selected disability expenditures for the years 1967, 1970 and 1973 along with the total percent changes in these expenditures from 1967 to 1973.

Table 6-41 and 6-42 provide the data concerning recent federal outlays for income security benefits and benefit outlays for the disabled and others.

TABLE 6-36
SURVEY DEFINITION OF DISABILITY

Survey Definition of Disability

Disability is defined in this study as a limitation in the kind or amount of work (or housework) resulting from a chronic health condition or impairment lasting three months or longer. The extent of incapacity ranges from inability to perform any kind of work to secondary limitations in the kind or amount of work performed. The disability classification is based on the extent of the individual's capacity for work, as reported by the respondent in a set of work-qualification questions. Data on employment and on functional capacities--such as mobility, activities of daily living, personal care needs, and functional activity limitations--were also collected to evaluate further the nature and severity of the disability.

The severity of the disability was classified by the extent of work limitations:

Severely disabled--unable to work altogether or unable to work regularly.

Occupationally disabled--able to work regularly, but unable to do the same work as before the onset of disability or unable to work full time.

Secondary work limitations--able to work full time, regularly and at the same work, but with limitations in the kind or amount of work they can perform; women with limitations in keeping house but not in work are included as having secondary work limitations.

The data presented in this report refer to the cilivian noninstitutionalized population disabled longer than six months.

Source: U.S. Department of Health, Education, and Welfare. Social Security Administration Office of Research and Statistics. Social Security Survey of the Disabled, 1966.

TABLE 6-37
PUBLIC PROGRAMS APPLICABLE TO THE DISABLED AND OTHERS

1973 Federal Transfer Payments

1. S.S. DI and Disabled Spouses Benefits
2. Aid to Families with Dependent Children (AFDC)
3. "Black Lung" Benefits for Coal Miners
4. Supplemental Security Income (SSI) (1)
5. Aid to the Permanently and Totally Disabled (APTD) (2)
6. Old Age Assistance (OAA) (2)
7. Aid to the Blind (AB) (2)
8. Veterans Administration Compensation for Service Connected Disability
9. Veterans Administration Pension for Nonservice Connected Disability
10. Armed Forces Retirement
11. Federal Civil Service Employees' Sick Leave
12. Federal Civil Service Retirement
13. Federal Employees' Compensation Act (FECA)
14. District of Columbia Employees' Workers Compensation
15. Longhoremen's and Harbor Workers' Act
16. Railroad Retirement
17. Food Stamps
18. Railroad TDI (Total Disability Insurance)

1973 Federal Medical Payments

1. Medicare (HI and SMI)
2. Medicare (MA)
3. Veterans'
4. Civilian Health and Medical Program of the Uniformed Services (CHAMPAS)
5. Maternal and Child Health Services and Project Grants
6. Crippled Children's Services
7. St. Elizabeth's Hospital
8. General Hospital and Medical Care
9. Medical Vocational Rehabilitation

1973 Federal Direct Services

1. Vocational Rehabilitation Basic Support Program
2. Vocational Rehabilitation Service Project Activities
3. Vocational Rehabilitation for Social Security Beneficiaries
4. Vocational Rehabilitation for Supplemental Security Income Beneficiaries
5. Social Services to Public Assistance Recipients
6. Developmental Disabilities Grants to States
7. Veterans Administration Vocational Rehabilitation
8. Veterans Dependents Educational Assistance
9. Veterans Administration Alcohol and Drug Dependency
10. Specially Adapted Housing for Disabled Veterans
11. Specially Adapted Autos for Disabled Veterans

TABLE 6-37
PUBLIC PROGRAMS APPLICABLE TO THE DISABLED AND OTHERS (CONTINUED)

12. Civilian Health and Medical Program of the Uniforms Services-Program for the Handicapped (CHAMPUS-PH)
13. United States Soldiers and Airmen's Home
14. Education for the Handicapped Regional Resources Center
15. Education for the Handicapped-Early Education for Children
16. Education for the Handicapped-Preschool and School
17. Education for the Handicapped-Deaf and Blind
18. Media Services and Captioned Films Look Program
19. Educationally Deprived Children
20. National Institute of Health-Drug Abuse Community Service Programs
21. Drug Abuse Formula Grants
22. N.I.H.-Alcohol Abuse Grants
23. Vocational Education-Basic Grants to Science
24. National Institute of Health-Scientific Communication and Public Education
25. Federal Employment Services
26. Federal Employment for the Handicapped
27. Gallandet College
28. American Printing House for the Blind
29. Books for the Blind and Physically Handicapped
30. Head Start
31. Coop. Extension Service

1973 State and Local - Transfer Payments (3)

1. Compulsory Temporary Disability Insurance (TDI)
2. Workers' Compensation
3. General Assistance
4. State and Local Employee's Sick Leave
5. State and Local Employee's Retirement

1973 State and Local - Medical Payments (3)

1. Compulsory Temporary Disability Insurance
2. Workers' Compensation
3. General Assistance
4. General Hospital and Medical Care

1973 Private Transfer Payments

1. Private Sick Leave
2. Whole Life Insurance Disability Payments
3. Federal Life Insurance Disability Payments
4. Private Health Insurance Disability Payments
5. Accidental Death and Disability Payments

TABLE 6-37
PUBLIC PROGRAMS APPLICABLE TO THE DISABLED AND OTHERS (CONTINUED)

1973 Private Transfer Payments (Continued)

6. Autombile Bodily Injury
7. Malpractice and Other Bodily Injury

1973 Private Medical Payments

1. Blue Corss and Independent Hospital Insurance
2. Blue Shield and Independent Medical Surgical Coverage
3. Insurance Plans Hospital Insurance
4. Insurance Plans Medical-Surgical Coverage
5. Accidental Plan Medical-Surgical Coverage

(1) This program began January 1, 1974 and replaces the categorical programs of APTD, OAA, and AB. It is included here for illustrative purposes only. The data are for the last six months of the fiscal year 1974 and do not represent any projections of a full year's expenditure, these numbers are not included in any estimate of total expenditure for the disabled in 1973.

(2) This program ended January 1, 1974 and its recipients were mostly transferred to the Supplemental Security Income Program; a small program still exists for recipients in Puerto Rico, Guam and other Protectorates. It is included here since it was funded in 1973; these numbers are included in total expenditures for the disabled in 1973.

(3) Note that many state expenditures for the disabled have been previously included under "Federal" programs as the state's mandatory matchings. A total assessment of State payments must include these matchings to avoid drastic understatement.

Source: The Bureau of Economic Research, Rugers University, 1975, Chapter 1.

TABLE 6-38
SELECTED DISABILITY EXPENDITURES (CURRENT DOLLARS)

	Transfer Payments	Percent Total	Medical Payments	Percent Total	Direct Services	Percent Total	Total	Percent Total
Federal Government	8,562,914	49.0	8,028,701	37.9	693,185	100	17,284,800	43.9
State and Local Governments	3,162,366	18.1	3,235,485	15.3	-	-	6,397,851	16.3
Private	5,745,347	32.9	9,834,081	46.9	-	-	15,679,428	39.8
TOTAL	17,470,627	100.0	21,198,267	100.0	693,185	100	39,362,079	100.0

1967 Disability Expenditures $(000)

	Transfer Payments	Percent Total	Medical Payments	Percent Total	Direct Services	Percent Total	Total	Percent Total
Federal Government	12,138,471	49.5	13,769,169	41.2	1,238,790	100	27,136,421	45.9
State and Local Governments	4,173,499	17.0	4,282,200	12.8	-	-	8,455,699	14.3
Private	8,176,489	33.4	15,404,000	46.0	-	-	23,580,489	39.9
TOTAL	24,478,459	100.0	33,455,360	100.0	1,238,790	100	59,173,609	100.0

1970 Disability Expenditures $(000)

	Transfer Payments	Percent Total	Medical Payments	Percent Total	Direct Services	Percent Total	Total	Percent Total
Federal Government	18,520,329	54.1	19,865,675	42.7	2,338,881	100	40,724,885	48.9
State and Local Governments	5,703,900	16.7	5,895,173	12.7	-	-	11,599,073	14.0
Private	10,009,425	29.2	20,813,281	44.7	-	-	30,822,706	37.1
TOTAL	34,233,655	100.0	46,574,129	100.0	2,338,881	100	83,146,664	100.0

1973 Disability Expenditures $(000)

Source: Bureau of Economic Research, Rutgers University, 1975

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TABLE 6-39
DISABILITY EXPENDITURES $(000)

	1967	Percent Total	1970	Percent Total	1973	Percent Total
Transfer Payments	17,470,627	44.4	24,478,459	41.4	34,233,654	41.2
Medical Payments	21,198,267	53.9	33,455,360	56.4	46,574,124	56.0
Direct Services	693,185	1.8	1,238,790	2.1	2,338,881	2.8
TOTAL	39,362,079	100	59,172,609	100	83,146,659	100
% NNP*	5.4		6.7		7.0	

*Percent NNP Computed by dividing Disability Expenditure by the NNP.

Source: The Bureau of Economic, Research Rugers University, 1975.

TABLE 6-40
CHANGES FROM 1967 to 1973 (CURRENT DOLLARS) $(000)

	Transfer Payments	Medical Payments	Total
Federal Government	+ 116%	+ 147%	+ 131%
State and Local Governments	+ 80%	+ 82%	+ 81%
Private	+ 74%	+ 110%	+ 97%
TOTAL	+ 96%	+ 120%	+ 109%

Source: Bureau of Economic Research, Rutgers University, 1975.

TABLE 6-41

FEDERAL OUTLAYS FOR INCOME SECURITY BENEFITS, BY DEPARTMENT AND PROGRAM (in millions of dollars)

Department, agency and program	Benefit outlays			
	1975 actual	1976 estimate	TQ estimate	1977 estimate
Department of Health, Education, and Welfare:				
Social security:				
Old-age and survivors insurance	54,839	62,245	17,023	70,572
Disability insurance	7,630	9,141	2,546	10,768
Hospital insurance	10,355	11,869	2,964	12,960
Supplementary medical insurance	3,765	4,687	1,380	5,804
Supplemental security income	4,081	4,545	1,255	5,245
Public assistance:				
Maintenance payments	4,592	5,200	1,458	5,625
Medicaid	6,840	8,184	2,220	8,703
Special benefits for disabled coal miners	939	960	225	906
Assistance to refugees	70	135	33	128
Public health service officers retirement	21	24	7	28
Medical care for retired commissioned officers	5	6	2	7
Proposed legislation included above	.....	(−315)	(−413)	(−3,057)
Total Health, Education, and Welfare	93,136	106,996	29,113	120,746
Veterans Administration:				
Disability and dependency and indemnity compensation	4,680	5,114	1,306	5,220
Veterans and survivors pensions	2,739	2,914	783	2,771
Life insurance (net subsidy)	527	544	137	568
Other veterans benefits	193	210	41	120
Proposed legislation included above	.....	.....	(−21)	(−85)
Total Veterans Administration	8,140	8,782	2,268	8,679
Department of Labor:				
Unemployment insurance (State programs)	11,958	16,878	3,285	14,832
Special unemployment assistance	183	800	250	300
Railroad unemployment	67	164	44	176
Unemployment compensation for Federal employees and ex-servicemen	553	473	120	440
Trade adjustment activities	13	60	30	120
Federal employee worker's compensation	186	249	76	291
Special benefits for disabled coal miners	6	20	5	27
Proposed legislation included above	.....	.....	.....	(300)
Total Labor	12,966	18,644	3,810	16,186
Department of Defense—Military:				
Military retirement	6,242	7,325	1,977	8,247
Medical care for retirees	548	595	156	688
Proposed legislation included above	.....	.....	.....	(−225)
Total Defense	6,790	7,920	2,133	8,935

Department, agency and program	Benefit outlays			
	1975 actual	1976 estimate	TQ estimate	1977 estimate
Department of Agriculture:				
Food stamps	4,357	5,283	1,077	4,307
Child nutrition	1,832	2,333	499	2,000
Special milk	124	103	.....	.....
Removal of surplus commodities	155	249	82	27
Proposed legislation included above	.....	(−132)	(−300)	(−2,218)
Total Agriculture	6,468	7,968	1,658	6,334
Civil Service Commission: Civil service retirement	6,825	8,198	2,248	9,753
Proposed legislation included above	.....	.....	.....	(−69)
Total Civil Service Commission	6,825	8,198	2,248	9,753
Railroad Retirement Board: Railroad Retirement	3,034	3,322	893	3,624
Total Railroad Retirement Board	3,034	3,322	893	3,624
Department of Housing and Urban Development:				
Public housing	1,312	1,429	316	1,489
Rent and mortgage interest supplements	761	866	243	1,062
Total Housing and Urban Development	2,072	2,295	559	2,551
Department of Transportation: Coast Guard retirement	105	122	32	133
Total Transportation	105	122	32	133
Department of State: Foreign Service retirement	53	65	18	79
Proposed legislation included above	.....	.....	.....	(−1)
Total State	53	65	18	79
Department of the Interior: General assistance to Indians	48	50	22	53
Total Interior	48	50	22	53
Department of Commerce: NOAA officers retirement	2	2	1	2
Total Commerce	2	2	1	2
Total Federal outlays	139,638	164,463	42,755	177,073

Source: Special Analysis--Budget of the United States Government, Fiscal Year 1977.

TABLE 6-42

BENEFIT OUTLAYS FOR THE DISABLED: BENEFITS, BENEFICIARIES, AND AVERAGE PAYMENT

	Benefit outlays (in millions of dollars)			Number of beneficiaries (thousands)			Average monthly payments (in dollars)		
	1975 actual	1976 estimate	1977 estimate	1975 actual	1976 estimate	1977 estimate	1975 actual	1976 estimate	1977 estimate
Civilian covered employment:									
Disability insurance	7,630	9,141	10,768	3,912	4,357	4,573	163	175	196
Federal civilian employees	1,359	1,658	1,965	271	290	306	418	477	536
Railroad employees	206	230	251	45	46	47	381	417	445
Coal miners	612	621	557	353	343	321	144	151	145
Medicare	1,368	1,853	2,213	2,025	2,255	2,565	56	68	72
Uniformed services:									
Service-connected disability	4,736	5,198	5,353	3,167	3,177	3,178	125	136	140
Other: Income-tested	503	536	505	513	510	488	82	88	86
Public assistance to the disabled:									
Supplemental security income	2,264	2,707	3,313	1,622	1,950	2,317	116	116	119
AFDC (disabled male head of family)	574	650	700	1,380	1,440	1,410	35	38	41
Medicaid	1,740	2,081	2,363	2,497	2,534	2,572	58	68	77
In-kind benefits to needy disabled: Food	305	370	323	1,062	1,141	938	21	27	29
Total	21,297	25,045	28,311	.....	.....	.....	....	....	....

Source: Special Analysis--Budget of the United States Government, Fiscal Year 1977.

Estimates of the Size of the Disabled Population

Most estimates of the size of the disabled population are based on the noninstitutionalized population. Table 6-43 presents the data for 1950, 1960 and 1970 dealing with the size of the population institutionalized within health-related institutions by age and type of institution. As shown in table 6-43 the largest institutionalized age group is the 65 year old and over group. Within this age group, the largest average annual percent change from 1950 to 1970 was in the number of residents in chronic disease hospitals followed by the number of residents in homes for the aged and dependent. In actual numbers though, the residents of the homes for the aged and dependent went from 217.5 thousand in 1950 to 795.8 thousand in 1970 an increase of 578.3 thousand individuals. Whereas the number of residents in chronic disease hospitals went from 8.9 thousand in 1950 to 35.2 thousand in 1970, an increase of 26.3 thousand individuals.

Tables 6-44 through 6-49 provide various estimates of the size of the disabled population within and in relationship to the noninstitutionalized population. These tables also provide some information concerning estimates of the age and sex distribution of the population and estimates of the distribution of the disabled population by the severity of the disability.

The estimated distribution of the disabled population 18-64 by age, sex and severity of disability as of 1966 is

presented in table 6-50. As shown in this table 34.47 percent of this disabled population are in the 55-65 year age group. When viewing the distribution of the disabled population when stratified by the severity of the disabled and age, the data shows an inverse relationship between the severity of the disability within the two age groups 18-44 and 55-64.

TABLE 6-43
PATIENTS IN HEALTH-RELATED INSTITUTIONS:
1950, 1960, 1970 BY TYPE OF DISABILITY
AND AGE (IN THOUSANDS)

	1950			1960			1970		
	Totals	Under 65 Yrs	65 Yrs and Over	Total	Under 65 Yrs	65 Yrs and Over	Total	Under 65 Yrs	65 Yrs and Over
1. Mental Hospitals	613.6	472.3	141.3	630.0	452.2	177.8	433.9	320.8	113.0
2. Homes and Schools for Mentally Handicapped	134.2	130.0	4.2	174.7	170.0	4.7	202.0	191.3	10.7
3. Homes for Aged and Dependent	296.8	79.2	217.5	469.7	81.8	387.9	927.5	131.7	795.8
4. Tuberculosis Hospitals	76.3	69.7	7.7	65.0	50.8	14.3	16.9	11.8	5.1
5. Other Chronic Disease Hospitals	20.1	11.2	8.9	42.5	19.3	23.2	67.1	31.9	35.2
6. Homes and Schools for Physically Handicapped	21.0	(NA)	(NA)	24.3	(NA)	(NA)	22.7	(NA)	(NA)
TOTAL PATIENTS	1,162.0	762.4	378.5	1,406.2	774.1	607.8	1,670.1	678.5	959.8

Average Annual % Change From:

	1950-1960			1960-1970			1950-1970		
	Totals	Under 65 Yrs	65 Yrs and Over	Total	Under 65 Yrs	65 Yrs and Over	Total	Under 65 Yrs	65 Yrs and Over
1. Mental Hospitals	2.64	- .4	2.32	-3.66	-3.37	-4.43	-1.72	-1.92	-1.11
2. Homes and Schools for Mentally Handicapped	2.67	2.72	1.13	1.46	1.19	8.57	2.07	1.95	4.78
3. Homes for Aged and Dependent	4.70	.32	5.96	7.04	4.88	7.45	5.86	2.57	6.70
4. Tuberculosis Hospitals	-1.59	-3.11	7.96	-12.60	-13.58	-9.73	-7.26	-8.50	-1.28
5. Other Chronic Disease Hospitals	7.78	5.59	10.06	4.67	5.15	4.26	6.21	5.37	7.12
6. Homes and Schools for Physically Handicapped	1.47	(NA)	(NA)	- .68	(NA)	(NA)	.34	(NA)	(NA)
TOTALS	1.93	1.52	4.85	1.73	-1.18	4.67	1.83	- .52	4.76

NA - Not Available
Source: Social Indicators 1973: Office of Management and Budget

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TABLE 6-44
ESTIMATES OF NUMBER OF DISABLED ADULTS
NONINSTITUTIONALIZED POPULATION

	Age Group 18-64 [in millions]	% of Noninstitutionalized Population
1966	17.8*	17.2
1975	23.3**	18.7
1972	15.5*** (age group 20-64)	14.6

*1966 SDA Survey

**Urban Institute Survey

***Social Security Follow up Survey of Disabled Adults

Source: Some Economic Considerations in Disability. J.D. Worrall, M. Berkowitz, J. Rubin. Bureau at Economic Research, Rutgers University.

TABLE 6-45
IN THE NONINSTITUTIONALIZED POPULATION
RATE OF IMPAIRMENTS AND LIMITATIONS 1963-1965
AND 1971 BY IMPAIRMENT AND AGE GROUP

Selected Impairment	Under 45		45-65		65-Over		All Ages	
	Impaired Per 1,000	Limited Per 1,000	Impaired Per 1,000	Limited Per 1,000	Impaired Per 1,000	Limited Per 1,000	Impaired Per 1,000	Limited Per 1,000
A. 1971								
Visual	21.3	2.1	63.0	6.7	204.6	32.2	47.4	5.9
Hearing	28.5	1.8	114.1	3.5	294.3	9.1	71.6	2.8
Speech	10.6	.6	6.4	1.3	8.5	2.4	9.6	.9
Paralysis	3.5	2.1	10.7	6.8	23.1	14.4	6.9	4.3
Absence								
Major Ex.	.5	.4	3.0	2.0	4.0	2.1	1.4	.9
Finger, Toe	2.0	.2	8.0	.2	12.2	.5	4.2	.2
Back, Spine	27.4	6.5	68.2	18.4	67.1	14.9	39.6	9.8
Upper Ex.	7.1	1.7	20.5	4.5	29.9	2.7	12.1	2.4
Lower Ex.	27.1	4.4	48.3	13.4	79.8	28.1	36.5	8.5
Other Mult.	3.0	1.5	9.4	5.9	11.2	6.1	5.1	2.8
TOTALS	131.0	21.3	351.6	62.7	734.7	112.5	234.4	38.5
B. 1963-65								
Visual	10.5	1.4	39.6	7.9	145.6	46.3	28.8	6.9
Hearing	16.4	1.0	70.5	3.0	216.3	12.8	45.7	2.5
Speech	7.6	1.2	4.9	1.6	6.5	2.9	6.9	1.4
Paralysis	4.9	2.5	10.8	6.6	26.8	20.0	8.1	4.9
Absence								
Major Ex.	.6	.3	3.0	2.2	4.0	2.3	1.4	.8
Finger, Toe	4.8	.2	16.7	.5	25.4	1.1	9.2	.4
Back, Spine	25.4	5.8	57.7	16.5	55.4	21.5	34.7	9.5
Upper Ex.	10.7	1.3	24.6	3.2	33.9	6.6	15.6	2.1
Lower Ex.	26.5	3.5	48.6	10.8	75.0	25.9	35.4	7.1
Other Mult.	5.6	1.5	15.5	5.9	22.1	8.9	9.1	3.0
	113.0	18.7	291.9	58.2	611.0	148.3	194.9	38.6
Ave. Percent Change Per Yr -65'-71	2.49	2.19	3.15	1.25	3.12	-4.50	3.12	-0.04

Source: A. Prevalence of Selected Impairments United States 1971
B. Prevalence of Selected Impairments United States July 1963-June 1965

Note: 1. Data from sources interpreted to cover three age groups for noninstitutionalized population.
2. Rate limited = prevalence rate - rate not limited.
3. Average percent change calculated on six years '65-'71.
4. Estimated by HEW in source A States That Selected Impairments Cover 92.8% All Impairments Reported During 1971.

TABLE 6-46
DISABILITY CATEGORIES AMONG NONINSTITUTIONALIZED
U.S. POPULATION AGED 18-64
1975

	Number In Thousands	Percent
Total population	124,800	100.0
Total disabled population.	23,300	18.7
Most severely disabled.	4,200	3.4
Severely disabled	3,900	3.1
Partially disabled.	15,200	12.2

Source: American Rehabilitation Bicentennial Review of the Rights of Handicapped Americans. James F. Garrett, Ph.D. May/June, 1976.

TABLE 6-47

PERCENT OF PERSONS WITH ACTIVITY LIMITATIONS DUE TO CHRONIC CONDITIONS: 1960, 1965, 1970, 1971 BY AGE AND DEGREE OF LIMITATION (PERCENT OF NONINSTITUTIONALIZED POPULATION)

	Persons with any Limitation in Major Activities						Persons Unable to Carry on Major Activities				
Year	Total	Total	<17	17-44	45-64	>64	Total	<17	17-44	45-65	>64
1960 (59-61)	10.4	8.1	.9	4.8	13.3	38.3	2.3	.2	.7	2.9	15.5
1965/66	10.5	8.4	.9	4.7	13.9	38.9	2.1	.2	.6	2.8	13.5
1970	11.8	8.9	1.3	4.9	15.4	36.5	2.9	.2	.9	4.4	16.5
1971	12.2	9.3	1.5	4.9	16.0	38.7	2.9	.2	.9	4.5	16.9
Average Annual % Change From:											
1960-65	.19	.73	-0-	- .42	.89	.31	-1.80	-0-	-3.04	-.70	-2.73
1965-70	2.36	1.16	7.63	.84	2.07	-1.27	6.67	-0-	8.45	9.46	4.10
1970-71	3.39	4.99	15.38	-0-	3.90	6.03	-0-	-0-	-0-	2.27	2.42
1960-71	1.46	1.26	4.75	.19	1.69	.09	2.13	-0-	2.31	4.08	.79

Source: Social Indicators 1975: Office of Management and Budget

TABLE 6-48
PERSONS WITH ACTIVITY LIMITATION 1974

	Persons with Limitations (1,000)		
	Both Sexes	Male	Female
All Ages	29,292	14,275	15,017
Under 45	9,454	4,852	4,602
45-65	10,327	5,160	5,167
65 & Over	9,511	4,263	5,247
Percent with -No Activity Limitation			
All Ages	85.9	85.7	86.0
Under 45	93.4	93.2	93.7
45-65	75.9	74.7	77.0
65 & Over	54.1	50.3	56.0
-Activity Limitation			
All Ages	14.1	14.3	14.0
Under 45	6.5	6.8	6.3
45-65	24.2	25.3	23.0
65 & Over	45.9	49.7	43.1
-In Major Activity			
All Ages	10.6	10.7	10.5
Under 45	4.0	3.9	4.0
45-65	19.0	19.8	18.1
65 & Over	39.3	44.8	35.3

Source: Statistical Abstract of the United States, 1975.

TABLE 6-49

RELATIONSHIP OF DISABLED POPULATION AND TOTAL CIVILIAN NONINSTITUTIONAL POPULATION 18-64 BY AGE GROUP, SEX AND DEGREE OF DISABILITY, 1966 SSA, SURVEY

(IN THOUSANDS EXCEPT PERCENTAGES)

	Noninstitutionalized Population 18-64 Yrs	Civilian Noninstitutionalized Population 18-64 Yrs	Disabled Population 18-64 Yrs	Disabled As % of Civilian Population 18-64 Yrs	Severely Disabled		Occupation Disabled		Sec-Work Limitations	
					18-64 Yrs	As % of Disabled	18-64 Yrs	As % of Disabled	18-64 Yrs	As % of Disabled
Total	106,507	103,381	17,753	17.17	6,100	34.36	5,014	28.24	6,639	37.40
18-44	67,412	64,393	6,563	10.19	1,810	27.58	1,692	25.78	3,060	46.63
45-54	22,082	21,980	5,072	23.08	1,515	28.97	1,787	35.23	1,770	34.90
55-64	17,013	17,008	6,119	35.98	2,774	45.33	1,535	25.09	1,810	29.58
Male	53,106	49,062	8,430	17.18	2,300	27.28	2,420	28.71	3,710	44.01
18-44	33,300	30,363	3,060	10.08	578	18.89	861	28.14	1,621	52.97
45-54	10,701	10,599	2,456	23.17	558	22.72	888	36.16	1,010	41.12
55-64	8,105	8,100	2,914	35.97	1,164	39.95	671	23.03	1,079	37.03
Female	54,401	54,319	9,323	17.16	3,800	40.76	2,594	27.82	2,930	31.43
18-44	34,112	34,030	3,502	10.29	1,232	35.18	830	23.70	1,440	41.12
45-54	11,381	11,381	2,617	22.99	957	36.57	899	34.35	760	29.04
55-64	8,908	8,908	3,205	35.98	1,611	50.27	864	26.96	730	22.78

Source: Handbook of Labor Statistics, 1975.
Rehabilitation of the Disabled. Social Security Survey of the Disabled: 1966. Report Number 12, September 1970. Ralph Treitel.

TABLE 6-50
DISTRIBUTION OF THE DISABLED POPULATION 18-64 BY AGE, SEX AND SEVERITY OF DISABILITY, 1966
(IN THOUSANDS EXCEPT PERCENTAGES)

Total Disabled	Number (in Thousands)			Percent Distribution		
	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE
Total	17,753	8,430	9,323	100.00	47.48	52.52
18-44	6,562	3,060	3,502	36.96	36.30	37.56
45-54	5,072	2,456	2,617	28.57	29.13	28.07
55-64	6,119	2,914	3,205	34.47	34.57	34.38
Severely						
Total	6,100	2,300	3,800	100.00	37.70	62.30
18-44	1,810	578	1,232	29.67	25.13	32.42
45-54	1,515	558	957	24.84	24.26	25.18
55-64	2,774	1,164	1,611	45.48	50.61	42.39
Occupationally						
Total	5,014	2,420	2,594	100.00	48.26	51.74
18-44	1,692	861	830	33.75	35.58	32.00
45-44	1,787	888	899	35.64	36.69	34.66
55-64	1,535	671	864	30.61	27.73	33.31
Secondary Work Limitation						
Total	6,639	3,71[illegible]	2,930	100.00	55.87	44.13
18-44	3,060	1,621	1,440	46.09	43.64	49.15
45-54	1,770	1,010	760	26.66	27.22	25.94
55-64	1,810	1,079	730	27.26	29.08	24.91

Source: Rehabilitation of the Disabled. Social Security Survey of the Disabled in 1966. Report Number 2, September 1970, Ralph Treitel.

Nonparticipants in the Work Force

The data in tables 6-51 provides a scheme for estimating the potential increases in the work force that may come about due to the possible employment of the disabled population. The estimates are based on an expected participation rate similar to that of the nondisabled population. This data also provides insight into the work force participation within the disabled population and into the work force participation within the disabled population based on the severity of the disability (as of 1966). In 1966 the difference between the expected number of work force participants and the actual number in the work force was 3.142 million individuals, 3.081 million of which were classified as being severely disabled. As shown in this table the members of the disabled population with secondary work limitations had a participation rate that exceeded that of the nondisabled population.

Table 6-52 contains the data estimating the total nonparticipants in the work force and the nonparticipants due to health or disability reasons by sex and race for the years 1968 through 1974. Table 6-53 contains the data estimating the nonparticipants due to health or disability reasons by age and sex for this same time period. It may be of interest to note, that of the 5.4 million individuals who were not in the work force in 1974 due to health or disability reasons 2.5 million were 60 years of age or over. These 2.5 million

individuals represent 46.30 percent of nonparticipants due to health or disability reasons.

TABLE 6-51
POTENTIAL INCREASES IN THE WORK FORCE 18-64 BY SEX AND DEGREE OF DISABILITY, (IN THOUSANDS EXCEPT PERCENTAGES)

	Civilian Noninstitutionalized Population 18-64	Civilian Work Force 18-64	Total Work Force As % Total Population 18-64	Disabled Population 18-64	Work Force Participation Rate Disabled 18-64	Rate of Disabled Participation below Rate of Nondisabled %	Not in Work Force Due to Disability* 18-64
Total	103,381	70,054	68.71	17,753	52.1	-17.1	3,142
Male	49,062	44,772	91.78	8,430	73.7	-20.2	1,703
Female	54,319	25,282	46.62	9,323	32.6	-15.4	1,436

	Disabled Population 18-64	Severely Disabled 18-64	Occupation Disabled 18-64	Sec Work Limitation** 18-64
Totals	17,753	6,100	5,014	6,639
Expected Work Force Participants	12,392	4,258	3,500	4,634
Actual Work Force Participants	9,250	1,177	3,264	4,807
Potential Numbers to Increase Work Force (Expected - Actual)	3,142	3,081	236	<173>
Disabled Participation Rate	52.1	19.3	65.1	72.4

*This column represents those disabled not in the labor force due to disability assuming that if they were not disabled their labor force participation rate would be the same as that of the nondisabled.

**The labor force participation rate of those disabled with secondary work limitations exceed the rate for the nondisabled population.

Source: Disability, Work, and Income Maintenance: Prevalence of Disability, 1966. Social Security Bulletin. May 1968. Lawrence D. Haber. Rehabilitation of the Disabled. Social Security Survey of the Disabled: 1966. Report Number 12, September 1970. Ralph Treital.

TABLE 6-52
TOTAL NONPARTICIPANTS IN WORK FORCE AND DUE TO HEALTH, DISABILITY BY SEX, RACE AND % TOTAL NONPARTICIPANTS DUE TO HEALTH, DISABILITY
1968-1974

Total Non-Participants (000's)	1968	1969	1970	1971	1972	1973	1974	Rate of Change Per Yr
Total	53,289	53,596	54,275	55,662	56,784	57,220	57,589	+1.30
Male	12,314	12,672	13,065	13,711	14,192	14,539	14,903	+3.23
White	10,881	11,164	11,475	11,961	12,291	12,564	12,825	+2.78
Other	1,433	1,508	1,509	1,750	1,901	1,975	2,078	+6.39
Female	40,975	40,924	41,210	41,951	42,591	42,681	42,683	+ .68
White	37,089	36,969	37,119	37,708	38,110	38,049	37,871	+ .35
Other	3,886	3,955	4,092	4,243	4,482	4,632	4,811	+3.62
Total for Health, Disability	4,310	4,453	4,358	4,632	4,945	5,191	5,444	+3.97
Male	2,119	2,192	2,253	2,390	2,522	2,675	2,828	+4.93
White	1,717	1,800	1,876	1,933	2,039	2,191	2,304	+5.02
Other	402	392	377	457	883	483	523	+4.48
Female	2,221	2,261	2,105	2,240	2,424	2,516	2,616	+2.77
White	1,749	1,777	1,663	1,767	1,844	1,984	2,066	+2.82
Other	473	483	442	474	580	532	551	+2.58
% of Total Due to Ill Health, Disability	8.1	8.3	8.0	8.3	8.7	9.1	9.5	Change '68-'74 +1.4
Male	17.2	17.3	17.2	17.4	17,8	18.4	19.0	+1.8
White	15.8	16.1	16.4	16.2	16.6	17.4	18.0	+2.2
Other	28.0	26.0	23.7	26.1	25.4	24.5	25.2	-2.8
Female	5.4	5.5	5.1	5.3	5.7	5.9	6.1	+ .7
White	4.7	4.8	4.5	4.7	4.8	5.2	5.5	+ .8
Other	12.2	12.2	10.8	11.2	12.9	11.2	11.5	- .7

Source: Handbook for Labor Statistics, 1975

TABLE 6-53
NONPARTICIPANTS DUE TO HEALTH, DISABILITY BY AGE AND SEX
1968-1974
(THOUDSANDS)

Nonparticipants Due Health, Disability by Age (000's)	1968	1969	1970	1971	1972	1973	1974	Average Rate of Change Per Yr
16-19 yrs								
Total	76	86	75	63	96	80	91	+3.05
Male	34	40	40	36	47	38	42	+3.58
Female	42	45	35	27	49	43	50	+2.95
20-24 yrs								
Total	137	147	143	171	177	162	184	+5.01
Male	53	56	55	72	75	74	85	+8.19
Female	84	91	88	100	102	87	99	+2.78
25-59 yrs								
Total	1,995	2,085	1,997	2,141	2,379	2,512	2,625	+4.68
Male	895	954	992	1,055	1,172	1,268	1,274	+7.12
Female	1,100	1,130	1,022	1,086	1,207	1,295	1,274	+2.48
60 yrs and over								
Total	2,133	2,137	2,144	2,256	2,293	2,437	2,545	+2.99
Male	1,137	1,142	1,165	1,128	1,241	1,295	1,350	+2.90
Female	996	995	979	1,028	1,065	1,142	1,195	+3.08

Source: Handbook for Labor Statistics, 1975

Projection of Major Variables Used Within the Scenarios

The first major variable used with the scenarios was society's capability to satisfy the needs or desires of its members either through the private or public sector. The main components used to measure society's capability were the net national product (NNP) and the total population. These measures were combined to form the per capita NNP. Table 6-54 presents estimates of the measures of the NNP and of the total population projected at varying average annual percent changes from 1975 to 2025. The projections of the NNP are made using constant 1972 dollars. Thus, the major effects of inflation have been removed from consideration. This was done in an attempt to maintain a fairly constant utility value of the dollar as a measure throughout the time frame. Although there were three different projections made for both the NNP and the total population, which in combination could produce nine different per capita NNP projections, only three per capita NNP projections are presented in table 6-54.

The projection of the per capita NNP, used in the MEDIAL scenarios was derived by dividing the "M" projection of the NNP by the "M" projection of the total population. The "U" projection of the per capita NNP, used in the UPPER scenarios, was derived by dividing the "U" projection of the NNP by the "U" projection of the total population. Likewise the "L" projection of the per capita NNP, used in the LOWER scenarios; was dervied by dividing the "L" projection of the NNP by the

"L" projection of the total population. The difference between "U" and "L" per capita NNP projections represent the largest range possible given the three projections of the NNP and the three projections of the total population. The "U" per capita NNP projection used the NNP projection based on the largest positive average annual percent change divided by the projected total population based on the smallest average annual percent change. The "L" per capita NNP projection used the NNP projection based on the smallest positive average annual percent change divided by the projection of the total population based on the largest average annual percent change. The plausibility of these projections may may be supported by the data contained in table 6-15 which shows that the average annual percent change in the per capita NNP from 1950-1975 in constant 1972 dollars was 1.79 percent. The individual five year average annual percent changes ranged from a low of .53 percent to a high of 3.39 percent both of which fall within the .51 percent to 4.15 percent range that appears as the average annual percent changes for the "L" and "U" projections of the per capita NNP shown in table 6-54.

The second major variable used in the scenarios was called willingness, referring to society's willingness to address societal problems through the public sector. The measure of willingness used in this technology assessment was the percent of NNP attributable to total government spending.

Table 6-55 presents three different projections of total government spending that would occur if the average annual percent change in this spending were to progress at the various rates of 5.6 percent, 3.0 percent or 1.3 percent. These three projections were then used in combination with the three projections of the NNP to determine the percent of each NNP attributable to the various projected changes in total government spending.

If total government spending were to progress at the average annual change of 5.6 percent, total government spending would eventually "exceed" both the "M" and "L" projections of the NNP. It should be noted that this specific eventuality for all practical purposes could not occur, in that total government spending is included in calculating the NNP. The identification of the implications within society that would be associated with having an NNP made up entirely of government spending was outside the scope of this paper. Even in conjunction with the "U" projection of the NNP, if total government spending were to progress at this rate of change, total government spending would constitute 65.84 percent of the NNP by the year 2025.

These three projections are not as unlikely as they may initially appear. For example, the average annual percent change in the NNP in constant 1972 dollars from 1950-1975 was 3.17 percent as shown in table 6-8. This percent change is slightly less than the percent change of 3.35 percent used

in projecting the "M" NNP. The percent change in total government spending in constant 1972 dollars from 1950-1975 was 5.33 percent, as shown in Table 6-24. Again this figure is slightly less that the 5.6 percent used in this projection of total government spending. Total government spending as a percent of NNP experienced an average annual percent change of 2.08 percent from 1950 to 1975 as shown in table 6-24. During this time frame total government spending went from 23.3 percent of the NNP to 39.0 percent of the NNP. If this measure continued at this average annual percent change, total government spending would constitute 65.25 percent of the NNP by the year 2000 and 109.17 percent of the NNP by the year 2025 regardless of the change in the NNP.

The two remaining projections of total government spending were each computed in combination with the three projections of the NNP as shown in table 6-55. The resulting range of total government spending as a percent of NNP extends from a low of 8.24 percent produced when using the "U" projection of the NNP in relationship to the 1.3 percent average annual change in total government spending, up to 73.99 percent produced when using the "L" projection of the NNP in conjunction with the 3.0 percent average annual change in total government spending.

The third major variable used within the scenarios was government spending for social needs. Three projections of government spending for social needs, in constant 1972 dollars,

are presented in table 6-56. Each of these projections were developed using different average annual percent change rates.

The first projection used a constant positive annual percent change of 7.2 percent throughout the time period from 1975 to 2025. At this rate, government spending for social needs would double its initial amount for the period in just under 10 years. For example, government spending for social needs in 1975 (in constant 1972 dollars) was 227.4 billion dollars. At this rate of change it would double this amount to 455.8 billion by 1985. This amount as of 1985 would again be doubled by 1995, etc. Without considering the underlying dynamics that provide the forces for such movement, this average annual percent change is not only possible but may be probable. The average annual change in government spending for social needs from 1950-1975 in 1975 dollars was 6.80 percent as shown in table 6-26. From 1965-1975 this change averaged 8.15 percent per year.

At an average annual change of 7.2 percent, government spending for social needs alone would "exceed" both the "M" and "L" projections of the NNP shown in table 6-54. Again it should be noted that government spending is included within NNP thus government spending could not "exceed" the NNP. Further evidence supporting the possibility of a 7.2 percent average annual change may exist when the kinematic movement over the period 1950-1975 associated with two of the components of government spending for social needs are considered.

The components referred to are Social Insurance (SI) and Public Aid (PA). The data in table 6-26 shows that SI and PA expenditures have experienced an average annual change of 9.91 percent and 8.04 percent respectively during this period, When these expenditures are considered in combination, the average annual change was 9.36 percent. If this rate of change were to continue into the future, they alone would "exceed" the "L" projection of the NNP by 2005, the "M" projection of the NNP by 2015 and the "U" projection of the NNP by 2025.

The second projection of government spending for social needs was formulated using two different average annual percent changes. The initial change of 7.2 percent per year was used until 1985. The percent change was then decreased to 4.0 percent which was subsequently used throughout the remainder of the period.

If some combination of average annual percent changes were to result in a projection quite similar to this projection, government spending for social needs alone would constitute 39.42 percent of the "M" projection of the NNP by 2025. This percent of NNP attributed to government spending for social needs would be .42 percent greater than the percent of the 1975 NNP attributed to total government spending for all needs. This projection of government spending for social needs would constitute 22.67 percent of the "U" projection of the NNP and would be comparable to the 21.3 percent of the 1975 NNP

NNP attributed to government spending for social needs as shown in table 6-24. Additionally, this projection of government spending for social needs would constitute 88.6 percent of the "L" projection of the NNP.

The third projection of government spending for social needs was formulated by using various average annual percent changes. The initial average annual change used was 7.2 percent from 1975 to 1985, a 1.3 percent average annual change from 1985 to 1995 followed by a -.9 percent average annual change from 1995 to 2010 and concluding with a .9 percent average annual change from 2010 to 2025. Although this projection radically reduces the average annual percent change over the entire time period, the amount of government spending for social needs in constant 1972 dollars in 2025 would be 227.8 percent of the amount expended in 1975. This projection of government spending for social needs would result in a decrease in the percentage of all three projected NNP's devoted to social needs. The percentage of the NNP in 1975 was 21.3 percent, under the "M" projection of the NNP government spending for social needs would be 8.15 percent, under the "L" projection of the NNP it would be 20.98 percent which would only be a slight reduction from its level in 1975. This projection in conjunction with the "U" projection of the NNP would reduce the percentage of the NNP to 5.37 percent in the year 2025. This 5.37 percent of the "U" NNP would be

only 1.06 percent less that the 6.43 percent of the 1975 NNP attributed to a major security expenditure with government spending namely national defense.

The fourth and final major variable used in the development of the scenarios was the size of the disabled population. Various estimates of the size and composition of the disabled population were presented in tables 6-43 through 6-53. In establishing the estimated boundaries within which the size of the disabled population could be projected, consideration was given to the primary objective of rehabilitation as defined elsewhere in this TA. The objective of rehabilitation is to integrate the individual within the community and if possible into the work force. Additionally, consideration was given to the conceptual differences between disabled and handicapped as presented in the Life Function Project paper within this volume. Some individuals may disagree with the estimated boundaries especially the upper boundary. Due to various concepts of disability and rehabilitation these estimates assume that the 300 to 400 thousand individuals successfully rehabilitated annually leave the disabled population. Thus, a dichotomous classification was used, i.e., either the individual was rehabilitated or was not. It was outside the scope of this paper to evaluate the criteria for identifying successful rehabilitation.

Each of the three projections of the size of the disabled population presented in table 6-57 were used within the corresponding scenarios of MEDIAL, UPPER and LOWER.

TABLE 6-54

PROJECTION OF NNP IN 1972 DOLLAR'S, PROJECTION OF POPULATION AND PROJECTION OF PER CAPITA NNP IN 1972 DOLLARS

	Projections of NNP in 1972 Dollars (Billion)			Projections of Population Various Average Growth Rates (Millions)			Per capita NNP Projections of NNP/Projections of Pop		
	M* Constant 3.35% to 2025	U* Constant 4.5% to 2025	L* 3.14% to 1985 1.33% to 2025	M .68%	U .33%	L 1.17%	M M/M	U U/U	L L/L
1975	1,068.6	1,068.6	1,068.6	213.6	213.6	213.0	5,002	5,002	5,002
1980	1,259.9	1,331.7	1,247.2	222.8	220.4	225.7	5,655	6,042	5,526
1985	1,485.6	1,659.5	1,455.7	234.1	228.4	241.3	6,346	7,266	6,033
1990	1,751.8	2,068.0	1,555.1	245.6	235.6	257.7	7,133	8,778	6,035
1995	2,065.5	2,577.2	1,661.3	253.6	241.6	272.0	8,145	16,667	6,108
2000	2,435.4	3,211.6	1,774.8	262.5	245.1	287.0	9,278	13,103	6,184
2005	2,871.6	4,002.2	1,896.0	271.0	248.0	302.0	10,596	16,138	6,278
2010	3,386.0	4,987.5	2,025.5	280.0	251.0	322.0	12,093	19,871	6,290
2015	3,992.4	6,215.4	2,163.8	288.0	253.0	342.0	13,863	24,567	6,327
2020	4,707.6	7,745.5	2,311.6	295.0	255.0	362.0	15,958	30,375	6,386
2025	5,550.6	9,652.8	2,469.4	300.0	252.0	382.0	18,502	38,305	6,464
Average Annual % Change From:			1975-80	.85	.63	1.11	2.48	3.85	2.01
			1980-85	.99	.72	1.35	2.33	3.76	1.77
			1985-90	.96	.62	1.32	2.37	3.85	+0.00
			1990-95	.64	.51	1.09	2.69	3.98	.24
			1995-00	.69	.28	1.08	2.64	4.20	.25
			2000-05	.64	.24	1.02	2.69	4.25	.30
			2005-10	.65	.24	1.29	2.68	4.25	.04
			2010-15	.57	.16	1.21	2.77	4.33	.12
			2015-20	.48	.16	1.14	2.85	4.34	.18
			2020-25	.34	-.24	1.08	3.00	4.75	.25
			1975-2025	.68	.33	1.17	2.65	4.15	.51

*The designators M, U, and L correspond with the projections used in the scenarios M=Medial, U=Upper and L=Lower.

TABLE 6-55
PROJECTIONS OF GOVERNMENT SPENDING AS PERCENT OF PROJECTED NNP'S IN TABLE 6-54
(IN 1972 DOLLARS IN BILLIONS)

	Projections of Government Spending at Average Annual Rates of:			At Projected Average Annual Rates of:								
					5.6%			3.0%			1.3%	
Year	5.6%	3.0%	1.3%	M* NNP	U* NNP	L* NNP	M NNP	U NNP	L NNP	M NNP	U NNP	L NNP
1975	416.8	416.8	416.8	39.00	39.00	39.00	39.00	39.00	39.00	39.00	39.00	39.00
1980	547.3	483.2	444.6	43.44	41.10	43.88	38.25	36.28	38.74	35.29	33.39	35.65
1985	718.7	560.1	474.3	48.38	43.30	49.37	37.70	33.75	38.47	31.93	28.58	32.58
1990	943.8	649.4	505.9	53.88	45.64	60.69	37.07	31.42	41.76	28.88	24.48	32.53
1995	1,239.8	752.8	539.7	60.02	48.11	74.63	36.45	29.21	45.31	26.13	20.94	32.48
2000	1,627.5	872.7	575.7	66.83	50.68	91.70	35.83	27.17	49.17	23.64	17.93	32.43
2005	2,137.3	1,011.7	614.1	74.43	53.40	112.72	35.23	25.28	53.36	21.39	15.34	32.39
2010	2,806.5	1,172.8	655.0	82.89	56.27	138.56	34.64	23.51	57.90	19.34	13.13	32.34
2015	3,685.3	1,359.6	698.7	92.31	59.29	173.32	34.05	21.87	62.83	17.50	11.29	32.29
2020	4,839.5	1,576.2	745.3	102.80	62.48	209.36	33.48	20.34	68.19	15.83	9.62	32.24
2025	6,355.0	1,827.1	795.1	114.49	65.84	257.35	32.92	18.93	73.99	14.32	8.24	32.20

*The designators M, U, and L correspond with the projections used in the scenarios M=Medial, U=Upper and L=Lower.

TABLE 6-56
PROJECTIONS OF GOVERNMENT SPENDING FOR SOCIAL NEEDS
(IN 1972DOLLARS BILLIONS)

Year	Projections of Government Spending for Social Needs At Annual Rates: Constant Rate 7.2% to Yr 2025	Variable Rates 7.2% to Yr 1985 4.0% to Yr 2025	Variable Rates 7.2% to Yr 1985 1.3% to Yr 1995 -.9% to Yr 2010 +.9% to Yr 2025
1975	227.4	227.4	227.4
1980	321.9	321.9	321.9
1985	455.8	455.8	455.8
1990	645.2	554.5	486.2
1995	913.5	674.6	518.6
2000	1,293.2	820.8	495.7
2005	1,830.8	998.6	473.8
2010	2,591.8	1,215.0	452.8
2015	3,669.3	1,478.2	473.6
2020	5,194.6	1,798.5	495.3
2025	7,354.1	2,188.1	518.0

TABLE 6-57
PROJECTIONS OF THE SIZE OF DISABLED POPULATION
(MILLIONS)

	Estimated Boundaries		Disabled Population in Scenarios*					
	Lower 10%	Upper 15%-20%	Medial		Upper		Lower	
Year	Pop U	Pop L	% Pop**	#	% Pop***	#	% Pop****	#
1975	21.4	32.0	12.5	26.7	12.5	26.7	12.5	26.7
1980	22.0	34.8	12.5	28.5	12.5	27.6	13.1	29.6
1985	22.8	38.3	12.5	29.3	12.5	28.6	13.7	33.1
1990	23.6	42.1	12.5	30.7	12.5	29.5	14.4	37.1
1995	24.2	45.8	12.5	31.7	12.5	30.2	[illegible]	41.0
2000	24.5	49.7	12.5	32.8	12.5	30.6	[illegible]	45.4
2005	24.8	53.8	11.9	32.4	- .7	29.5	16.5	50.1
2010	25.1	59.1	11.4	32.0	- .7	28.5	17.4	55.9
2015	25.3	64.6	10.9	31.5	- .7	27.5	18.2	62.3
2020	25.5	70.3	10.5	30.8	- .7	26.6	19.1	69.1
2025	25.2	76.4	10.0	30.0	- .7	25.7	20.0	76.4

*Starting point in 1975 assumed 12.5% of total population as midpoint of the boundaries.

**The disabled population as a percentage of total population remains constant to year 2000 then the disabled population reduces to 10% of the total population in 2025.

***The disabled population as a percentage of total population remains constant to year 2000 then the disabled population reduces at an annual rate of .7%.

****The disabled population gradually increases to 20% of the total population by year 2025.

POSSIBLE RELATED ISSUES

Introduction*

[*I don't think this paper is very scholarly. It does not do justice to the quality of the other papers. It is very unbalanced and assertive*]

Solving problems associated with human disability is a complex business. Problems, which at the level of the disabled individual are less than clear, because of lack of definition and stable criteria for judgment, can become completely befuddling at a level on which governmental and social organizations are involved. Organized attempts to solve any problem are likely to generate certain other complex--though perhaps predictable [*not always!*]--problems, and if these related adverse [*not always!*] "side effects" are not minimized then the solution may well be worse than the originally addressed problem.

Any viable approach to solve disability problems cannot merely consider what would appear to be the obvious, that a set of solutions can be found within current financial resources.

[*It is not obvious. In fact, it is a dream to believe that a set can be found unless we are simply considering a constrained maximum.*]

Federal support of programs, for example, has been generally considered a means of providing solutions for almost any set of problems, but federal support is a possibility only when resources are available. With governmental spending for social

*This project paper contains both original text presented to work-session participants and (in italics) responses they gave to the text.

programs such as welfare, education, social security and other income-transfer programs taking up to 55 percent of total federal spending (up from 33 percent in 1968), resources for governmental solutions to social problems may be rapidly approaching a limit.

> *Consider other countries, e.g., the socialist countries--denote a greater percentage of their output to the public sector. We could have the same percentage of government spending within increased public sector and have a much larger absolute amount devoted to "social program." I don't think this is likely to happen.*

This report highlights some of the more obvious issues related to the attempts to the organized solving of problems associated with disability in American society. Though the report is far from comprehensive, the issues described are very real features which must be accounted for in "mapping out" the logic involved in solving rehabilitation problems through careful analysis.

Who the Disabled Are

[*The solution requires reorganization of values.*]

Although the disabled are a real-enough group of persons in our society, identifying whom we include among the disabled is a problem. Current dictionary definition points out the disabled as persons having "weakened or destroyed normal physical or mental abilities, someone "crippled," or someone "incapacitated." Saad Nagi (1975) cites a more finely wrought concept in his definition.

> Disability can be defined as a form of inability or limitation in performing roles and tasks expected of an individual within a social environment. These tasks and roles are organized in spheres of life activities involved in self-care, education, family relations and other interpersonal relations, recreation, economic life, or employment and vocational concerns.

[*I think we can make the most progress by using Nagi's definition of disability. We should, in addition, consider condition, impairment, and functional limitation.*]

A great amount of such definition depends on prior definition of what is "normal" and what is "expected." Normalcy may be defined at the level of the individual, at the level of some intermediate social environment, or at the level of our entire culture. Is a neurosurgeon disabled if, because of accident or disease, he can no longer perform neurosurgery? Or is he nondisabled because he can function as any other individual in a recently acquired job of building wooden soft-drink cases? Is a paraplegic millionaire disabled because of physical incapacity to attend country-club social functions, and is an impoverished member of an ethnic minority possibly disabled for the same reasons? More generally, is normalcy something judged within an individual, within a subculture, or within the whole of American culture?

Determining social environment is not the only problem in assessing the criteria for classifying persons as disabled.

Determining objectives for individuals in society is another very great problem. When "meeting expectations" is involved, as it must be with definitions such as Nagi's, the assessment is even more complex. We must determine whose expectations are to be met. Are the expectations of the disabled individual important? Are those of his family and peers to be weighed? Are the expectations of all members of a cultural community to be met, even though these persons have little current knowledge about either disability or disabled persons? And, more generally, is "expectation" any sort of realistic criterion which may be used to judge or classify persons disabled or not.

Also, if normalcy and expectation could be objectified, we would still face an extremely difficult task of providing a reliable and continued assessment of the social standard by which objective normalcy and expectation could be measured.

[*Yet we attempt to do so already--see disability insurance programs as an example, or consider the eligibility criteria for the federal-state rehabilitation program.*]

We must consider variable factors in such measurements, such as the fact that the rate of increase of the productivity of individual wage-earners in our culture is currently less than half that of workers in the United Kirgdom, Canada, West Germany, France, Japan, and Italy. With fluctuation in "normalcy" and level of "expectation," the criteria for determining abnormality, incapacity, and expectation also

fluctuate. Ultimately, if the accepted standards of "normalcy" and level of "expectation" were to decrease to such an extent that those currently considered disabled meet these standards, many of the problems of disability would, by definition, no longer exist.

[*The last statement is already true in underdeveloped countries, "rural" America and the ghettos.*

It might exist - with a different name.]

The Disabled Within Society

We may of course, altogether circumvent the problem of defining the disabled population and take a "political" view extreme to that of the analytic view above. The disabled along with their advocates are, as a self-defining subculture, persons who compose a political and economic force which will [*may*] manifest itself through representation in the cultural body politic. Solving the problems of the disabled, then, becomes an activity not of our own reckoning, but one done primarily within the character of disabled persons. This approach to solution is not a bad one if, indeed, the American ideal of "life, liberty, and the pursuit of happiness" effected in the body politic reflects what the disabled want rather than what nondisabled persons say the disabled need.

[*At issue, partly, is how much those who "use" income redistribution have to say about it in a "free" society, and how those who may have been struck down at random or by the rest of society have to say about the redistribution.*]

There is a distinct possibility that we view the disabled in a much too patronizing way, treating each individual with a condescension ill suited to even a helpless child. Most disabled persons are able to analyze their own problems and to determine their solutions, and they feel that the nondisabled should not prejudice politics so that self-determination is ruled out. But should we ignore self-determination, we may find that we generate more problems in the name of pious solution than the disabled ever faced from disability.

In an eloquent description of our culture's causing problems for disabled Americans, a man crippled by polio, Leonard Kreigel, (1976) described the political plight already forced on the disabled as analagous to that forced upon Blacks.

> Black Americans now believe that they possess choices and that they need not live as victims. They are now engaged in the struggle to force society to accept, or at least to accommodate itself to, the black conceptions of how blacks are to live. The cripple's situation is more difficult. If it exists at all, his sense of community with his fellow sufferers is based on shame rather than pride. Nor is there any political or social movement that * will supply him with a sense of solidarity. If anything, it is probably more difficult for the cripple to relate to "his" own than to the normals.

*[*This is a very strong statement.*]

Kreigel's thesis, that the disabled person is everywhere forced to play the self-denigrating and unauthentic role of an

"Uncle Tom," is in alarming contradiction to the basis of many social-welfare programs designed to serve the disabled. Needs are provided for, but at a price of dehumanization. He points out:

> The disabled must accept the fact that his existence is a source of discomfort to others. This is not to say that he is not permitted to live with comfort and security; these, in fact, are the very gifts his society is most willing to grant him. The price he is expected to pay, however, is the same price the black man has been expected to pay, at least until very recently: he must accept his "condition," which implies not that he accept his wound but that he never show more of that wound than society thinks proper. He is incapable of defining what selfhood is.

Simply stated, the disabled individual is by current tendency forced to live outside of culture* to the point that he does not know who he is. He can cast a ballot, but he cannot sway another voter; he can accept sustenance, but the sustenance is only for maintaining his lifestyle of invisibility; he can receive sympathy for his problems from the nondisabled, but he cannot seek his own solutions.

*[*Misnomer! This is impossible. If he can vote he is living and participating in the culture.*

This all flies in the face of disabled activist groups.]

Kreigel's view is well documented by persons associated with other disabilities. In mental illness which causes disability, money for institutionalized social welfare is viewed to be not so much a boon to the afflicted as it is "convenience

money" which buys a more pleasant environment for naive members of nondisabled society. Two noted specialists on institutions for the mentally retarded, Benjamin and Dorothea Braginsky (1976), have described the socio-political position of the educable mildly mentally retarded in particularly specific terms.

> It seemed to us that in many ways the concepts of mental illness and mental retardation were remarkably similar. Both refer to assumed defects of the mind, and are treated as medical problems... This similarity...led us to suspect that the diagnosis of mental retardation (the "mild," "cultural-familial," "educable" varieties) is for children what the diagnosis of mental illness is for adults: a myth which conveniently and effectively serves society by removing its human debris from the mainstream of community life.

The Braginskys point out that the "support" that is offered the mentally retarded is just as likely to be what produces intellectual defects as it is to be what remedies it. What is proffered by society as medical cure to a dysfunction is ineffective in achieving the avowed objectives, but it is extremely efficacious in achieving other goals not-so-readily announced.

> Psychologists, educators, social workers, and other "helping" professionals all play vital roles in the metamorphosis of the mentally retarded child. Just as they unwittingly transform surplus adults into emotional defectives, they transform discarded children into

> intellectual defectives. Mental retardation, like mental illness, is not a psychological concept but a socio-political one. It is another of the many myths perpetrated by a society that refuses to recognize its needed social reforms. The camouflage of the politics of diagnosis and incarceration have led to an enormous expenditure of time, effort, and money in a useless search for psychological and biological factors when the real problem exists in society.
>
> We need to move away from the traditional realm of psychology and psychiatry to an objective of the politics of deviancy. This would lead not only to creative new theories and research, but would provide new forms of management and treatment for deviants--forms that would no longer dehumanize and degrade the recipients of our professional help and would free professionals from having to justify their roles by defending a delusion.

From the viewpoint of the disabled, they have not been permitted to offer their own analyses of their problems, they are not allowed by the present socio-political environment to seek their own solutions. Additionally, they are prohibited from even mere participation in larger communities of "normal," problem-solving individuals or politically effective "special interest groups." Their problems may very well be solved more effectively as their political influence increases.

[*But they are mobilizing!*]

Values

It is generally accepted that conscious human decisions are (or at least should be) the result of a judgemental process.

This process, whether it is a result of rationality or emotion, is based on some set of values. Superficially, at least, it appears that those values may vary from culture to culture, society to society or individual to individual. They may appear to vary within a culture, society or individual.

However, Maslow contends that certain values "... are intrinsic in human nature...intrinsic rather than acquired" (Goble, 1973). Eight basic human values are identified by Rucker (1969). He refers to these values as affection, respect, skill, enlightenment, power and influence, wealth, well-being, and rectitude. The specific terms used in identifying these basic intrinsic values are less important than the concepts underlying the terms. Table 7-1 provides examples of the various types of human transactions that he associates with these values.

Many of these values are referred to indirectly during the discussion of some of the related issues. If one were to assume that human activity is consciously undertaken to enhance the realization of the values, it would logically follow that humans have expectations associated with these values. For example, various legislative actions and court decisions have been directed towards articulating the rights of the disabled, thereby enhancing their power and influence.

See Jeffrey Rubin's paper before the Eastern Economic Association and before the HEW Assistant Secretary Planning and Evaluation Overview Conference on Disability.

Table 7-1

Framework of Transactions and Values

Transactions	Values
of emotional warmth, intimacy, and support in congeniality, friendship, and love	affection
recognizing admirable uniqueness and individuality in a context of mutual identity	respect
that develop talents to the limits of potential ability	skill
that stimulate each person to find his own truth in every issue while gaining understanding of social norms and the significant events of human history	enlightenment
in which each person will participate in making decisions which concern him and exert informal influence according to his talents and responsibilities	power and influence
providing facilities, materials and services to promote the conditions of living	wealth
which foster the physical and mental health of each person	well-being
that share experience enabling the person to develop a sense of authenticity, ethics, and integrity in his behavior within the broad limits of his social context	rectitude

By articulating these rights, the decisions may enhance the well-being of individuals through medical and mental health care; wealth through income maintenance*; skill through training; enlightenment through education; and respect and affection through affirmative action programs both in work and community environments.

*[*and income supplement*]

But what of that human value called rectitude? Have these legislative actions and court decisions adversely affected a large segment of the disabled population by not "enabling the person to develop a sense of authenticity, ethics, and integrity in his behavior within the broad limits of his social context?" Is this the reason underlying the fact that many of the disabled view current treatment of them to be partronizing as it was previously suggested?

[*This paragraph is difficult to understand.*]

An English novelist born with muscular dystrophy, Louis Battye, described the world of the disabled.

> Somewhere deep inside us is the almost unbearable knowledge that the way the able-bodied world regards us is as much as we have the right to expect. We are not full members of that world, and the vast majority of us can never hope to be. If we think otherwise we are deluding ourselves. Like children and the insane, we inhabit a special sub-world, a world with its own unique set of referents (Kriegel, 1976).

If Battye is correct and the disabled do "... inhabit a special sub-world, a world with its own unique set of referents,"

does this uniqueness exist in the basic values themselves or in the individual means utilized to enhance those values? Does the feeling that society patronizes the disabled stem from a possible conflict between the value associated with power and influence (articulated rights) and the value of rectitude? For example, it may be possible that a disabled individual, capable of doing things for himself or herself may resent the assistance offered in doing the task if it is perceived that the assistance is given on the assumption that the disabled is incapable of performing the task. The disabled may view this situation as unjust and therefore an act (which decreases) his value of power and influence in that his influence is not based on his capabilities but on his condition.

As described by Rucker (1969) the value of rectitude is related to a "sense of authenticity, ethics, and integrity" in the behavior of the individual "within the broad limits of his social context." This also implies "responsibility for one's behavior." Thus, it would appear logical to assume that there is a relationship between rights and responsibilities, both of which are in the social context.

Rights and Responsibilities

[*See Rubin for a summary on Mental Illness and a shorter discussion on general disability.*]

Various legislative actions and court decisions have recently held that the individuals of the disabled population

have specific rights within society. For example, the Rehabilitation Act of 1973 addresses the rights of the severely disabled to receive rehabilitation services. Additionally, certain employers are required or have the responsibility to implement affirmative hiring and promotion practices for the disabled. Court decisions have affirmed the rights of the disabled to receive free public education regardless of the costs involved in providing this education.

[*Incidentally--decisions rendered in an economic vacuum will be ignored if they are costly enough.*]

In fact, the existence of insufficient funds to provide education to both the abled and the disabled is not justification to exclude the disabled. Thus, in effect, the court held that the educational costs in meeting the needs of the disabled take precedence over the needs of the abled.

[*The last statement is wrong!*

Not as far as I can see--they simply stated "equal" rights, not "more" rights (precedence) for the disabled.]

There are opposing policies and court decisions involving access to mass transportation. Some decisions held that the costs and the state of technological development must be considered. Others state that the costs should not be considered because the disabled have a right of access to mass transportation. Additionally, it has been held that the state of technology should be improved to satisfy these rights.

[*I don't believe there is a gap or lack of technology.*]

In many instances, the satisfaction of these various rights will require the use of financial resources. If these rights are satisfied within the private sector under profit-motivated circumstances (and are not subsidized by the government), normal economic conditions prevail. If these rights are satisfied through government spending, it is logical to assume that the funds will be made available through some form of taxation.

[*What about reorganization of priorities?*]
As used here, the term taxation includes both the direct and indirect forms. Most everyone is familiar with the direct forms of taxation, e.g., income tax, real estate taxes, sales taxes, etc. Indirect taxes could be said to include government borrowing (assuming that this money will be repaid sometime from taxes) and reduced costs or charges for services granted certain individuals due primarily to a condition of disability, age, etc. and not necessarily related to the individuals talents and responsibilities. Additionally, deficit spending on the part of government may adversely influence the value of the money held in the private sector. Thus, government taxation could possibly be construed as the initial step in a cycle and includes any means used by the government to shift the exercise of economic power from the private to the public sector.

Government spending of tax dollars within the American society consists of the purchase of goods and services or in the form of transfer payments granted to individuals. Thus,

the taxation cycle is reversed in that government spending could be viewed in general as the shifting of the economic power from the public sector back to the private sector.

[*But the dollars go to different places, i.e., income distribution; effects are crucial.*]

The general design of the taxation cycle results in a redistribution of the economic power among the various members of society within the private sector. Similar tax structures of various European countries have precipitated societal problems within those countries. A recent newspaper article (1976) pointed out that in England "only 38 percent of the population is responsible for generating tax revenue." From this it may be inferred that 100 percent of the government-supported social programs are in fact supported by 38 percent of the population, at least financially.

[*What about corporate taxes?*]

A striking similarity exists in this country. In 1975 the population of the American society numbered approximately 215 million individuals. The size of the employed workforce was approximately 85 million. Thus, just under 40 percent of the American population provided the general federal income-tax base. This percentage drops to less than 37 percent of the total population if one were to consider that in all probability a minimum of 7 percent of the employed workforce pay no income taxes. This 7 percent may be comprised of those workers in the lowest income brackets and probably includes

some from the middle or upper income brackets who have sufficient deductions to offset taxable income.

[*This is the labor force--we also tax capital, however--the argument is not very convincing. Income and spending decisions are generated in the family-household, not on an individual basis.*]

Social programs now constitute approximately 55 percent of federal spending. It may be possible to visualize situations that could arise wherein major segments of the private sector of society could become dissatisfied with the results of the redistribution of the economic power held in society. Additionally, the dissatisfaction may arise not primarily by the results of the redistribution but with the manner in which it was accomplished, e.g., forced through increased governmental taxation as opposed to the free exercise of a voluntary redistribution within the private sector. For example, there is a limit to the total contributions an individual may claim as a deduction in calculating income taxes due.

An article in the April 1975 issue of Reader's Digest by Ralph Kinney Bennet points out that:

> While the cost of living has risen 40 percent in this decade, the typical family's total tax bill has climbed 65 percent--more than any other consumer item. Reason: government spending at all levels. And the fact that the government spends much more than it takes from us in taxes has contributed greatly to the inflation that depletes the value of every dollar we earn.

Although many forms of individual taxation in this society may produce regressive results, most are designed around the

basic premise of ability of the individual to pay the taxes, e.g., personal income taxes on earned or unearned (taxable investment) income. Laws in this area are very complex, yet they are quite specific about establishing and placing definite responsibilities upon the taxpayer, presumably based on the ability to pay. At tax time, it may be difficult to convince some taxpayers that the payment of the taxes should be considered as a positive enhancement of one's value of responsibility. With the number of tax advisors in this society, it would appear that a major pastime of many taxpayers consists in trying to figure out how to reduce the "enhancement of one's value" gained through the payment of taxes.

The large portion of governmental spending is currently directed at the purchase of goods and services. The vast majority of these purchases place responsibilities on the individuals or organizations providing the goods and services, e.g., an industrial or research contractor. Generally, the ability of the individual or organization to meet these responsibilities greatly influences the initial selection of the provider. Continued association in this capacity is usually based on the successful fulfillment of these responsibilities.

[*The rights and responsibilities section is getting abit disjointed.*]

A great deal of money is expended by government wherein the recipients have no responsibilities connected with the use of the goods and services provided or of the transfer payments received. Some contend that placing responsibilities

on the recipients in exchange for these goods and services or transfer payments would be an infringement of the individual's rights.

There have been many studies that show that the effectiveness of governmental spending involved with the purchase of goods and services has been enhanced by imposing responsibilities on the providers of these goods and services in the form of performance requirements. Thus, some members of society may contend that the effectiveness of the users or recipients of many of these goods and services or transfer payments could be enhanced if appropriate responsibilities were attached.

It may be well to note that for every piece of legistation or court decision that articulates rights of individuals and thereby requires the expenditure of governmental funds, there is a tax impact. This tax impact can be absorbed in either any one or a combination of two or more of the following ways: (1) increase taxes (including deficit spending), (2) reallocate current governmental expenditures in light of the changing situation, or (3) increase the effectiveness of current governmental spending.

Programs Serving the Disabled

There is no scarcity of programs now serving the disabled. The Bureau of Economic Research, Rutgers University in 1975 identified "...over 85 public and private program that assist

the disabled." In the community of Lubbock, Texas with a population of approximately 175,000, there are 134 separate agencies serving the disabled and handicapped. The "visibility" of particular programs is questionable in view of the plethora of programs, and the administrative overhead of programs with duplicate services and objectives is certain. Management, legislative, and legal costs involved in deliverying even those services which are of dubious value to the disabled must be weighed against the benefits of the services. The professional rehabilitation establishment, as a politically viable and articulate special-interest group, must be heard with certain reservation. We can no more expect nondisabled rehabilitators to denigrate the usefulness of their life's work than we can expect the same of disabled individuals.

[*Omit "nondisabled" and remainder of sentence after "work."*]

Moreover, new programs for the disabled must be administered, and administration of these programs will, as a matter of prudence and efficiency, be handled by persons and organizations involved in current programs.

Conflicting Results

There are probably many reasons why possible undesired effects are produced as a result of the current practices involving disabilities and rehabilitation. Some of these undesired effects may be traced to a lack of definitive answers to the questions of how one identifies the sick or disabled who

need restoration. Just what does participation in the activities of a normal life involve? What is or how can one define a universally acceptable concept of a useful and constructive place in society?

An article entitled "Public Pension Plans--A Nationwide Scandal (Trevor Armbristor, 1975) related a case in Hudson County, New Jersey. The pension plan allows those public employees disabled on the job to "retire at half-salary no matter how old they are or how long they've worked." This pension fund was placed in receivership by the courts. On a reexamination of the cases of those obtaining benefits, the receiver struck "240 former employees from the fund's rolls. Among them: an obstetrician at a county-run hospital who has been collecting a service-connected disability pension of $5,000 a year, in addition to the $200,000 or so he earns in private practice."

Could this obstetrician have been dropped due to his private income yet in fact have been eligible under the disability rules of the fund? Did his service-connected disability adversely affect his "activities of a normal life?" For example, there is myth that all American physicans are on some golf course at least one afternoon per week. Logically, then, golf may be a normal life activity for physicians. It is possible that the obstetrician could no longer participate in this activity due to the disability. A question of equity may be raised in this case. Should all disability payments be

subject to some "means" test? Should some accident incurred disabilities constitute de facto eligibility?

There are other contradictory results dealing with disabilities. For example, there is a case of a particular disabled female living in a major Midwestern city. This individual qualified for several services including those of an attendant under various disability programs. The value of the annual benefits for these services is between $20,000 and $22,000. This individual works a normal work week as a switchboard operator and receptionist for an agency involved in rehabilitation. Although this work is performed on a voluntary basis, the normal salary or wage that would be paid would probably be in the $9,000 to $11,000 range (primarily based on the financial characteristics of this city's general employment picture). Due to various regulations governing the receipt of benefits, this individual would loose many of their benefits if she were to receive a salary or wage. The reduction in benefits would result in a lower standard of living even after consideration had been given to the net salary or wage she would receive.

[*System bound disincentives!*

Standard disincentive argument. Case is better made with disability income program, etc. rather than with an individual.]

It is possible that a nondisabled person performing the same functions, but in exchange for a salary or wage, would in fact have a lower standard of living than the disabled

individual? What if this nondisabled individual were the sole supporter of two, three, or four dependents?

Both of these cases, the obstetrician and the switchboard operator and receptionist tend to support the drive toward normality or average standard of living. Casper W. Weinberger, Former Secretary of Health, Education and Welfare made the following comments in an article.

> ...Equal opportunity means the right to compete equally for the rewards of excellence, not to share in its fruits regardless of personal effort. The egalitarians miss the point. They would divide the wealth equally, overlooking the crucial fact that all human progress throughout history owes its origins to the talented and the enterprising. We must keep a system that allows us to develop the talents of all, no matter what their origin.
>
> Of course, we must protect and help the most vulnerable members of society. But if we do not persevere in the quest for excellence, then our reward will be a dearth of excellence...
>
> ...the real social agenda of America, still unfinished, is to discover and reward excellence wherever we find it...
>
> If we fail to see this as our real agenda, we risk delivering our destinies over to the cold and lifeless grip of a distant egalitarian government whose sole purpose is to ensure an equally mediocre existence for everyone, achieved at the cost of personal liberty.
>
> We therefore must summon up a common determination to change drastically

> our present welfare-state approach--not only because it is not working but because it can ruin all of us. The price of more and more public programs, we must remember, is less and less private freedom. Congress quite evidently believes that the road to popularity and reelection is to say "yes" to every demand for every increase in all existing programs, plus agreeing to new ones. Only a wave of public sentiment can give Congress the nerve to say "No more."

[*This lengthy quote, added to the preceding discussion seems a bit reactionary.*

Using only one reference on this critical issue is biasing the direction of this paper. Where is an alternative opinion?

I would not think that Reader's Digest is suitable as a reference for a major philosophical question. If you don't get a better source, I would recommend that the discussion be dropped.]

Thus a critical problem facing society centers around the question of the "what should be" for all of the issues.

Cause and Effects of Disability

Disability was defined earlier in part "...as a form of inability of limitation in performing roles and tasks expected of an individual within a social environment..." The various rehabilitation programs would appear to exist primarily to reduce or eliminate the adverse effects of disability.

[*Unfortunately, many of the programs "for the disabled" may be impairment based--not disability (handicap) based, or status based (veterans).*]

A previously discussed issue centered on the definition of "Who the Disabled Are." These disabled constitute the disabled

population within society. Many of these individuals may never leave this population due primarily to the characteristics of their disability. Thus, various rehabilitation programs could be viewed as attempts to reduce or eliminate, at least, some of the adverse effects of the disability. Other rehabilitation programs are designed to enable the disabled member to perform these functions within society and thereby depart the disabled population. The amount and type of resources required in many of these programs can be directly related to the size of the respective target populations and the objectives of the program. Thus, it would appear that a reduction in the size of the disabled population may result in a decreased demand for various resources.

[*What about the disproportionate delegation of funds, i.e., double deductions for blind versus other disability types?*]

Many members of the present disabled population were, at one time, functioning members of society while others were born into this population.

[*Many members of the able population are potential members of the disabled community!*

Stress the different nature of the impairments and functional limitations involved. Should we have some goals for the deaf and dumb population as for an orthopedic case with previous labor market experience?]

It may well be that society's success in reducing the size of this population may ultimately rest in its ability to either prevent or somehow reduce the numbers entering this population. Thus, prevention may be considered a technology related to rehabilitation.

[*The opposite seemed to hold sway in previous papers.*]

It would appear unlikely that the disabled population, as currently defined, could be reduced to zero within the 50 year timeframe used in this TA.* Formidable obstacles exist that must be overcome before entry to this population can be totally prevented. For example, many disabilities are normally associated with the aging process, a process that may not currently be fully understood. This lack of understanding is being partially addressed through research in the area of life extending technologies.

*[*Not strong enough--it would be impossible without an "act of God."*]

At some point in time, it may become necessary to reconsider various social problems in light of changing conditions. These changing conditions may be such, as to necessitate a change in the funding of social programs and may well exist within the timeframe of this TA. Various technologies may be developed to reduce the entry into or to increase the exit from this disabled population. Success in these areas coupled with success in the development of the life extending technologies may appear to be desirable objectives.

Conclusion

It is not clear at all that current programs supporting the disabled are working to the betterment of the disabled,

[*Is this supportable?*

I would say that it is not clear that they are adequate, equitable or efficient.]

and it is not altogether clear that policymakers and program administrators can satisfactorily manage an improvement which benefits the disabled, the taxpaying society, or both. [*Agree!*] Additional funding of present programs and present "declarations of rights for the disabled" may, even if by chance the programs and ideals show more promise, become prohibitive. The only certainly optimistic note in any scenario for supporting the disabled is that we now have the potential for formulating policies for the future in light of this knowledge.

[*We have many more important things going for us.*]

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MODELS FOR PROBLEM-DRIVEN TECHNOLOGY ASSESSMENTS: APPLICATIONS TO HUMAN REHABILITATION

Introduction

In any decision or policy analysis context, a model of sorts is always employed. Asserts Forrester [1],

> ...there is nothing new in the use of models to represent social systems. Each of us uses models constantly. Every person in his private life and his business life instinctively uses models for decision making. The mental image of the world around you which you carry in your head is a model. One does not have a city or a government or a country in his head. He has only selected concepts and relationships which he uses to represent the real system. A mental image is a model. All of our decisions are taken on the basis of models. All of our laws are passed on the basis of models. All executive actions are taken on the basis of models. The question is not to use or ignore models. The question is only a choice among alternative models.

The purpose of any technology assessment (TA) is perhaps to organize and structure the collective assessments of those who possess a substantive understanding of the problem of technology concerned so that the resultant product exhibits consequences which can be reasonably assimilated (by a policy maker) into the form of a mental model upon which policy judgments and decisions can be made. As such, any TA is a data-gathering and model-building process. The models so formulated are perhaps appropriate under differing circumstances, but nevertheless state what the probable consequences

of any particular policy will be for a prescribed socioeconomic scenario. Ideally, the TA could provide the policy maker with a kind of cookbook of alternative policies and their consequences which depend upon the type of environmental circumstances that prevail. The policy maker could simply turn to the section which best describes the prevailing circumstances he feels are characteristic of the existing socioeconomic system and study the alternative policies together with the probable consequences and utilities associated therewith.

In view of the suggested philosophical interpretation of the purpose and essence of any TA, it is apparent that model building and the methodologies utilized therein are fundamental to the kinds of activities in which the TA is engaged. In the following sections, strategies for model fabrication are suggested. A block diagram model of the overall problem is conceptualized first in which critical exogenous and endogenous entities are identified. This is followed by the task of fabricating some structure between the various entities or quantities previously listed. Then methods for extracting the behavioral consequences from the structure are described, such behavior also being heavily dependent upon the scenario in which the system (or subsystem) of interest is embedded. The scenario description provides settings for the exogenous inputs to the subsystem of interest. The behavioral consequences could then be ranked preferentially in order to arrive at some

assessment regarding policy alternatives and their appropriateness under differing scenarios.

Note that the scenario description as discussed here provides only projections of trends in the larger socio-economic system itself but says very little about the behavior of the subsystem of interest, the rehabilitation subsystem. If the scenario description describes in detail the consequential behavior of the rehabilitation subsystem, it will resemble a procedure in which the answers to the fundamental questions to be addressed are provided before the required analysis is performed. The scenarios will in this modeling study be assumed to provide a behavioral description of the resources available for human rehabilitation, the costs associated therewith, and the societal priorities in solving its problems. These quantities have been generally classified as belonging to the capability and willingness of society to address problems in rehabilitation.

An Input/Output Approach to Problem Formulation

The first task is to identify the inputs and the outputs, referred to as the exogenous quantities. The inputs can be further disaggregated into those which are controllable and those which are not. Uncontrollable inputs include such entities as the costs of resources required by rehabilitation programs as well as the capability and willingness of society to address the problems of the disabled. Controlled inputs include the funding allocated (both public and private) for rehabilitation as well as the distribution of that funding among the various rehabilitation programs.

Outputs can similarly be partitioned into those which are measured or quantified and those which are not. Measured output may include the number of disabled integrated into the workforce, the number of disabled receiving supplemental income, the number of disabled institutionalized, the number of disabled who are students, etc. These outputs also serve as measures of performance for the system. Unquantified or qualitative outputs might include such entities as increased competition in a limited job market, infringement upon the rights of the able-bodied, etc. Table 8-1* provides a partial list of controlled inputs and measured outputs for the system.

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*Table 8-1 appears on page 8-8.

Of course, in order to delineate those controlled and measured exogenous entities one must state who the policy maker is and have a lucid understanding as to what entities he is able to control, what entities he is able to measure. The decision or policy makers for the subsystem or interest, clearly are congressmen, bureaucrats, and administrators of rehabilitation programs.

A Paradigm for the Rehab Subsystem

Consider the problem of rehabilitation (and the machinery required to ameliorate or alleviate it) as a subsystem embedded within the larger socioeconomic system as shown in the block diagram model of figure 8-1.

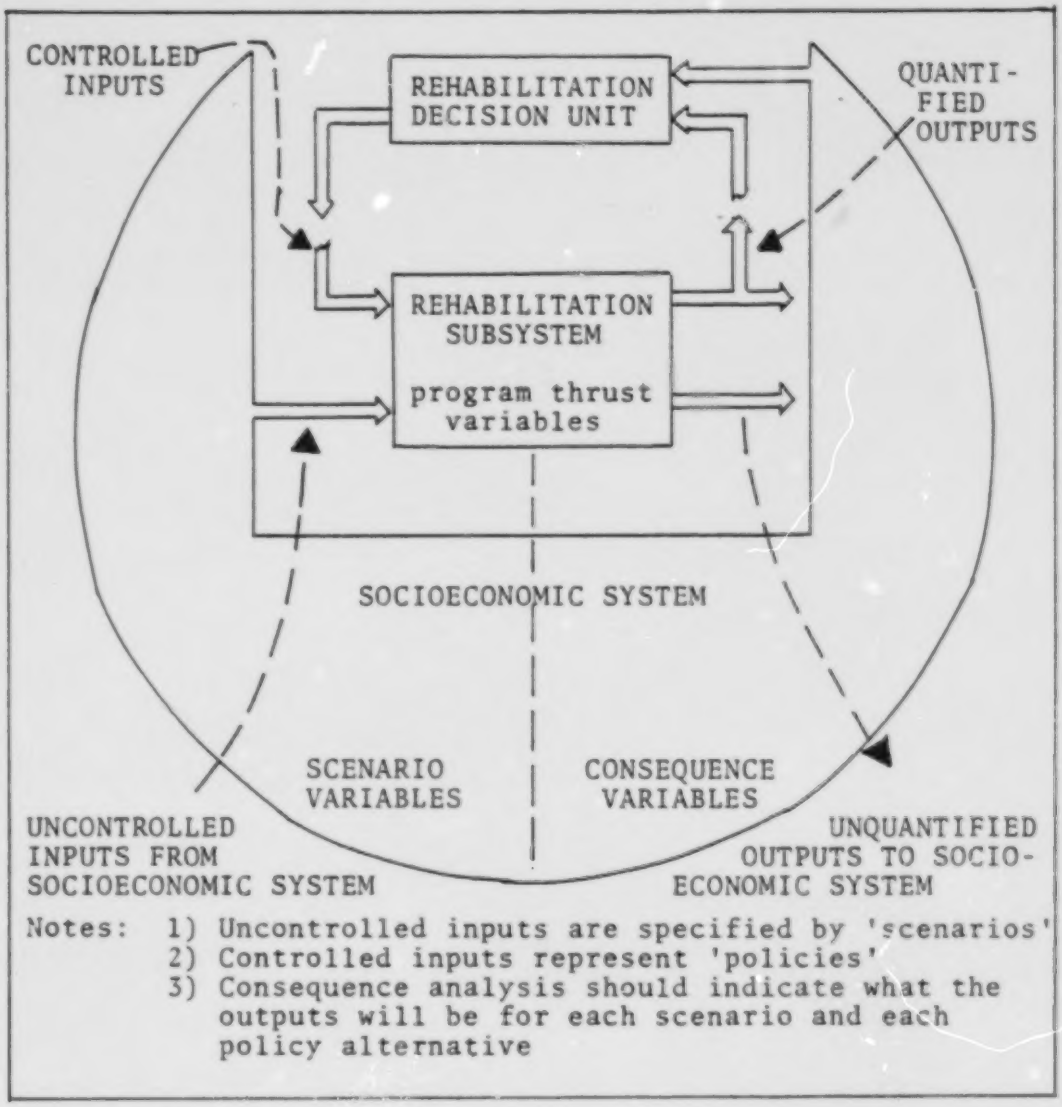
CONTROLLED INPUTS
REHABILITATION DECISION UNIT
QUANTI-FIED OUTPUTS
REHABILITATION SUBSYSTEM
program thrust variables
SOCIOECONOMIC SYSTEM
SCENARIO VARIABLES
CONSEQUENCE VARIABLES
UNCONTROLLED INPUTS FROM SOCIOECONOMIC SYSTEM
UNQUANTIFIED OUTPUTS TO SOCIO-ECONOMIC SYSTEM
Notes: 1) Uncontrolled inputs are specified by 'scenarios'
2) Controlled inputs represent 'policies'
3) Consequence analysis should indicate what the outputs will be for each scenario and each policy alternative

Figure 8-1. A block-diagram model of the rehabilitation subsystem.

TABLE 8-1

IDENTIFIED COMPONENTS OF THE REHABILITATION SUBSYSTEM

Controlled Inputs	Quantitative Outputs
Funds Allocated for Rehab (Public and private)	Number of Disabled in Work-force
Distribution of Funds to Programs	Number of Disabled who are Institutionalized
Administration of Programs	Number Receiving Supplemental Income
	Production of Disabled
	Measures of Mobility, Health, Communication, etc.

Having identified the controlled or observed exogenous entities, the modeler next endeavors to identify the uncontrolled exogenous inputs and the unobserved outputs. These have been identified (unexhaustively) as indicated in Table 8-2.

TABLE 8-2

LIST OF UNCONTROLLED INPUTS AND UNOBSERVED OUTPUTS TAKEN IN RELATION TO AN IDENTIFIED CONTROLLER

Uncontrolled Inputs	Qualitative Outputs
Capability	Infringements upon the Rights of Able-Bodied
Willingness	Loss (or Gain) in Self-esteem Among Disabled
Governmental Expenditures	Competition Among Jobs
Governmental Expenditures for Social Concerns	Labor Union Attitudes
Governmental Expenditures Available for Rehab	Able-Bodied Attitudes
Costs of Services	
Cost of Living	
Employment/Unemployment	
Number of Jobs	

Note that Funding for Rehab appears in both Tables 8-1 and 8-2; this is because the actual funds that get allocated to rehabilitation may be quite different from the funds available for rehabilitation. The controller previously identified is under no obligation to spend all of the actual funds available, but in general he cannot spend more than the actual funds available.

The next set of entities of interest are the endogenous quantities -- that is, the quantities that are internal to the rehabilitation subsystem itself. Among these must be included the disabled population demography, including size, age distribution, sex, severity of disability, and disability category. In addition, variables which describe the nature and extent of the various rehabilitation programs must be included, such as numbers employed, costs associated therewith, supportive services required, etc. These are listed in Table 8-3 below.

TABLE 8-3
LIST OF ENDOGENOUS ENTITIES

Endogenous Entities
Disabled Population Demography
Net Rates of Growth by Disability Category
Rehabilitation Program Variables
Numbers Employed (Physicians, Researchers, Administrators, Nurses, etc.)
Costs
Supportive Services

Extensive entity lists (as defined in the parent study) are provided in Appendix A under the headings scenario variables, consequence variables, and affected parties. For the most part, the scenario variables include those variables which would be identified as inputs (either controlled or uncontrolled), while the consequence and affected party entities resemble outputs (either measured or qualitative). It is believed that the rehabilitation subsystem will be demonstrably influenced by changes in its 'scenario' or 'policy' inputs and that such sensitivity will be observed in the measured outputs. However, the entire socioeconomic system itself will likely exhibit a remarkable insensitivity to changes in rehabilitation policy [2, Ch. 7].

In summary, the subsystem of interest is to be analyzed by means of a collection or <u>set</u> of entities denoted by Q. From what has just been said, there exists a partition on Q in which Q is divided into subsets representing uncontrolled inputs U_u, controlled inputs U_c, quantitative outputs Y_o, qualitative outputs Y_u, and endogenous entities E. The partition upon Q is represented as follows:

$$\pi_Q = \{U_u; U_c; Y_o; Y_u; E\}.$$

Each of these subsets can be developed through the use of brainstorming techniques and tabulation methods [16]. Even so, other partitions are equally appropriate. For example,

Q could be partitioned into policy variables (program thrust variables) P, scenario variables S, consequence variables C, and affected parties A. (These are the classifications being used in the parent technology assessment.) In this case the partition is denoted by

$$\boxed{\Pi_Q = \{P;S;C;A\}}$$

and such a partition enables an identification of the entities into the indicated categories. This identification facilitates structuring the problem as will be discussed in the next section.

Structural Models for the Rehabilitation Subsystem

Having determined the important entities associated with the rehabilitation subsystem, the next step is to structure the relationships between the various entities. Generally, the structure is delineated by means of a digraph or causal diagram which shows the interactions amongst the various entities. When the entities of interest are classified as uncontrolled inputs, unmeasured outputs, observed outputs, controlled inputs, and endogenous entities, then it is known a priori that the structure is that shown in figure 8-2.

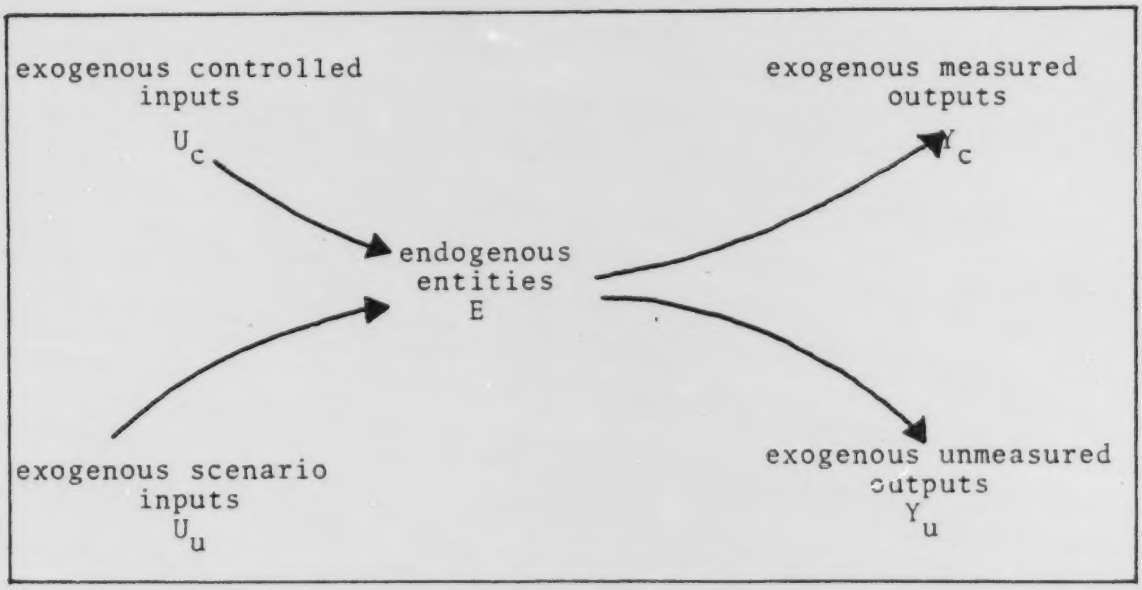

Figure 8-2. A simple a priori causal structure for problem-driven technology assessment

On the other hand, when the variables are classified as policy variables, scenario variables, consequence variables, and affected parties, the a priori structure is that shown in figure 8-3.

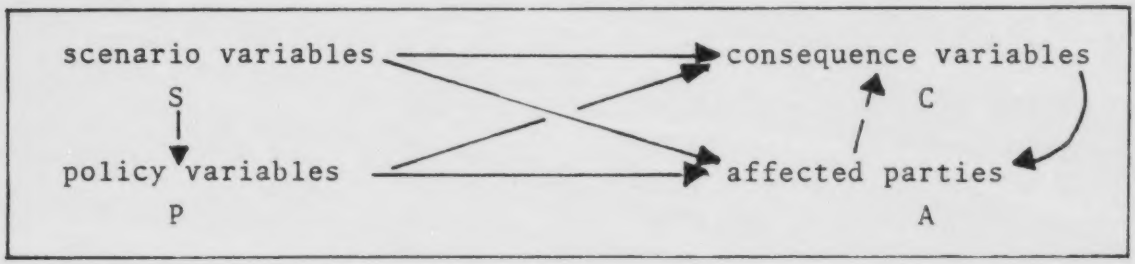

Figure 8-3. A second simple a priori causal structure for problem-driven technology driven technology assessment.

Several methods are available for the fabrication of a structure from the list of entities previously identified. The first of these is a straightforward technique called causal diagramming. Developed by Forrester [3], the technique simply involves a by-hand, manual determination of the causal interactions.

Consider the following causal diagram (figure 8-4) of a scenario model which replicates the behavior of the scenario descriptions found in the social contexts paper [10]. There are four major variables in each scenario--capability, willingness, government spending social needs, the disabled population, and several other variables. The interactions between these basic variables and the causal structures required to sustain their prescribed rates of growth or decline are shown in figure 8-4 which represents a "typical" causal diagram model.

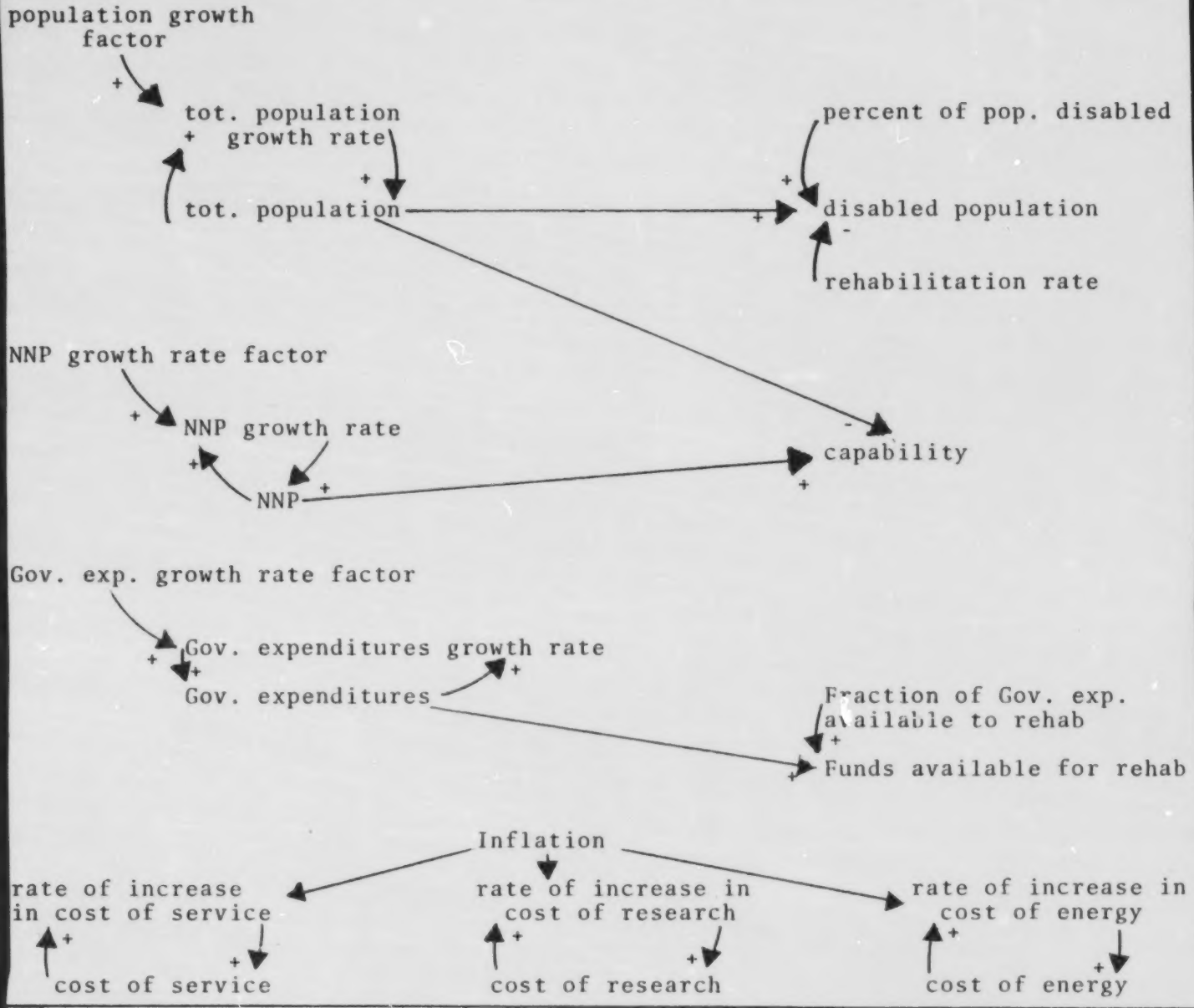

Figure 8-4. Causal diagram of scenario model

There are other more systematic and often-times more time-consuming methods for development of causal or structural models. One recently developed technique is due to Warfield [6-9] and is referred to as "interpretive structural modeling", (ISM). ISM is particularly appropriate for structuring systems possessing a very high degree of hierarchical interaction when considered in a particular relational context. Interactive computer aids to perform much of the computational drudgery are available and operative at Texas Tech and were used in the workshop sessions.

In performing the computations, algorithms within the computer's memory ask a series of interrogations using a relation R and entity set Q previously defined to the computer. Each interrogation focuses the panel's attention upon the interaction between two specific elements interrelated by means of R. For example, if the relation used is "causes or affects" and two quantities are "capability" and "willingness", then the machine would ask, "Does capability cause or affect willingness in most cases?". The responses which are entered are then used to fill a reachability matrix M defining reachability for all pairs (q_i, q_j).

The technique solves the following problem. Given a relation R and a set of elements Q which are specified by the participants of a workshop, find a minimum-edge digraph (or interpretive structural model) representing the minimum causal interactions that exist for the relation R defined

over all pairs (q_i,q_j) in the Cartesian product Q x Q. In solving this problem algorithms first fill the reachability matrix M assuming the relation R posessses the reflexive and transitive properties only. These assumptions allow a great many inferences to be made, thereby considerably lessening the actual number of interrogations to be asked in order to fill the reachability matrix. This reachability matrix then induces a partition on the set Q into n blocks called levels:

$$\pi_Q = \{L_1;L_2;\ldots;L_n\},$$

where L_1 represents the subset of quantities on the top level of the hierarchy and L_n represents that set of quantities on the bottom level of the hierarchy. In terms of inputs and outputs, one generally considers L_1 to be outputs whereas L_n are inputs and all of the remaining quantities on levels $L_2;\ldots;L_{n-1}$ are endogenous. All quantities contained in a feedback loop are on the same level of the hierarchy and current algorithms do not furnish any information regarding the causal structure of such loops, other than to indicate the quantities involved in such a loop. As a result, systems possessing a lot of feedback mechanisms cannot be adequately structured by means of this method. The method also requires that a quantity list be available before beginning the actual structuring exercise itself, and when computer aids are used there is no opportunity to add additional quantities to the

list or to change any responses that have previously been recorded. Finally, the method does not provide any assistance in generating the set of entities Q.

Nevertheless, ISM does possess inherent usefulness and can be used to structure 'soft' situations thereby lending considerable insight into the process of interest. As an example, consider the "intent structure" [12] representing the hierarchical ordering of the goals of rehabilitation and strategies for their achievement, as shown in figure 8-5.

Figure 8-5 clarifies the relationships between the overall goals of the rehabilitation subsystem and strategies for achieving those goals. Consistent with the desire to solve problems by treating causes rather than symptoms, figure 8-5 makes emphatic the following conjectures.

1) Supplemental income is a substitutionary technique that compensates for the inability of the rehab subsystem to enable the disabled to care for themselves; as such, it treats symptoms only.

2) Environmental change enhances health, mobility, soc./att. and communication, when these function are impaired. Consequently, this technology can only alleviate the problems of mobility and communication, but can never ameliorate them.

Figure 8-5 also shows what relationship a program thrust goal bears to the overall goal structure of the rehabilitation subsystem. As a result, it was useful to the workshop participants in discerning the goal structure within which a particular program thrust goal is embedded; thus, figure 8-5

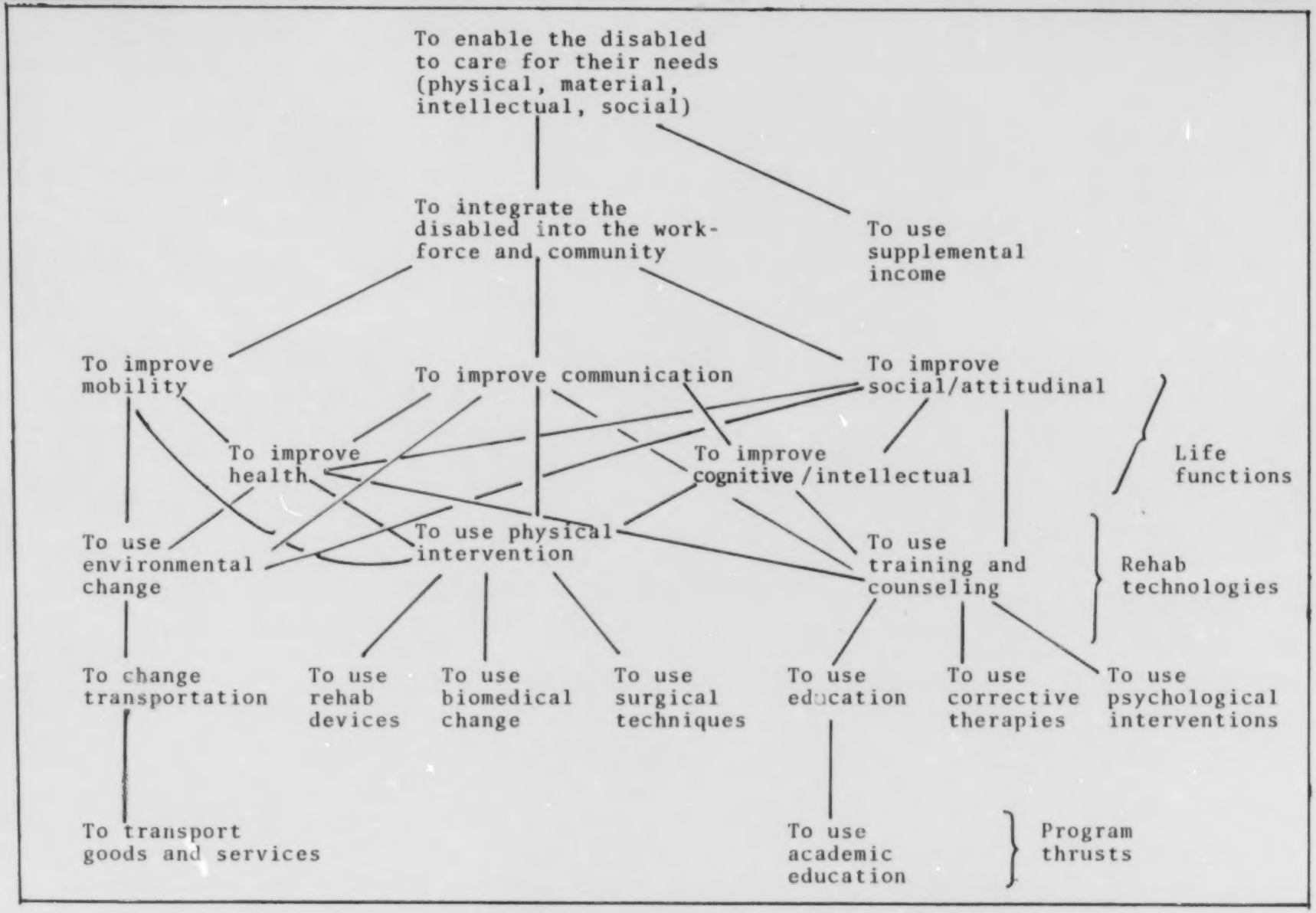
To enable the disabled to care for their needs (physical, material, intellectual, social)
To integrate the disabled into the work-force and community
To use supplemental income
To improve mobility
To improve communication
To improve social/attitudinal
To improve health
To improve cognitive/intellectual
Life functions
To use environmental change
To use physical intervention
To use training and counseling
Rehab technologies
To change transportation
To use rehab devices
To use biomedical change
To use surgical techniques
To use education
To use corrective therapies
To use psychological interventions
To transport goods and services
To use academic education
Program thrusts

Figure 8-5. Intent structure of the interactions between overall goals, life functions, rehab. technologies, and program thrusts (as suggested by Onur Ulgen)

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enhances an understanding as to how a particular program thrust contributes to the overall goals of the rehabilitation subsystem.

Behavioral Models for the Rehabilitation Subsystem

The next step is to extract the behavioral consequences from the structure of the rehabilitation subsystem subject to policy and scenario considerations (controlled input and uncontrolled input specifications). As before, a number of approaches are available. The easiest, yet least sophisticated, was to have the workshop panelists verbalize the likely behavioral consequences resulting from a particular solution strategy or policy under a given scenario. This was done in the workshop sessions.

Other approaches involve the use of the computer to project the consequences (in terms of behavior) of a given set of interaction hypotheses as specified by a structural model. Again, these techniques vary in sophistication and complexity, starting with KSIM [12] and proceeding from there through GSIM [13], QSIM [14], XIMP [15], and finally system dynamics [3]. Each of these techniques are discussed and contrasted in relation to their appropriateness for technology assessment studies in appendix B.

Towards a Systematic Modeling Methodology for TA

In preceding sections of this paper, examples of the use of numerous modeling methodologies in technology assessment were provided. These examples serve to illustrate how additional insight and understanding regarding the system in terms of its structure and behavior could be gained from expeditious use of these methodologies. Specifically, the use of causal diagramming as developed by Forrester was illustrated and the more recent technique of interpretive structural modeling developed by Warfield was discussed. Specific causal models relating to the rehabilitation subsystem were developed including a causal model of the scenario sector and an intent structure of the goals of rehabilitation.

In this section, a systematic procedure for problem-driven TA is suggested which was substantially followed by the parent technology assessment, but which endeavors to incorporate the modeling techniques previously described.

Step 1. Bound the TA by stating spatial and temporal boundaries.

Step 2. Embed the problem being assessed in its larger socio-economic context, and treat it as a subsystem of this larger system. Identify the inputs and outputs, determine who the policy makers are, determine what inputs they are able to control and what outputs they are able to observe.

Step 3. Determine a set Ω of objectives for the issue context.

Step 4. Identify a problem set ρ for the general problem being considered. Generally, a problem arises whenever an assessment of "what is" differs substantially from a parallel assessment of "what should be." Rank each element of the set ρ in the order of diminishing overall importance using ISM.

Step 5. Relate the set Ω of objectives to the problem set ρ, using the relation "ω_i contributes to the removal of ρ_j."

Step 6. Devise a set of program thrusts and strategies S_j, each of which is sufficient to remove or alleviate an associated problem ρ by achieving objective(s) ω_i. Do this for each problem ρ_j in the entire problem set ρ.

Step 7. For each strategy $s_{jk} \in S_j$ determine what technologies T_{jk} are required in order to implement the strategy. The resultant structure is shown in figure 8-6.

Step 8. Assess the consequences of implementation of each technology T_{jk} in terms of costs, benefits, deliverability, as well as those social effects which may be unintended, indirect, and delayed. The use of structural modeling (ISM) and GSIM will assist with the consequence analysis.

Step 9. For each program thrust addressed to a problem and/or objective, select a few (one or two) strategies which appear to offer the greatest promise under any given scenario.

Step 10. From the strategies formulate "policies" as consisting of harmonious, coordinable strategies.

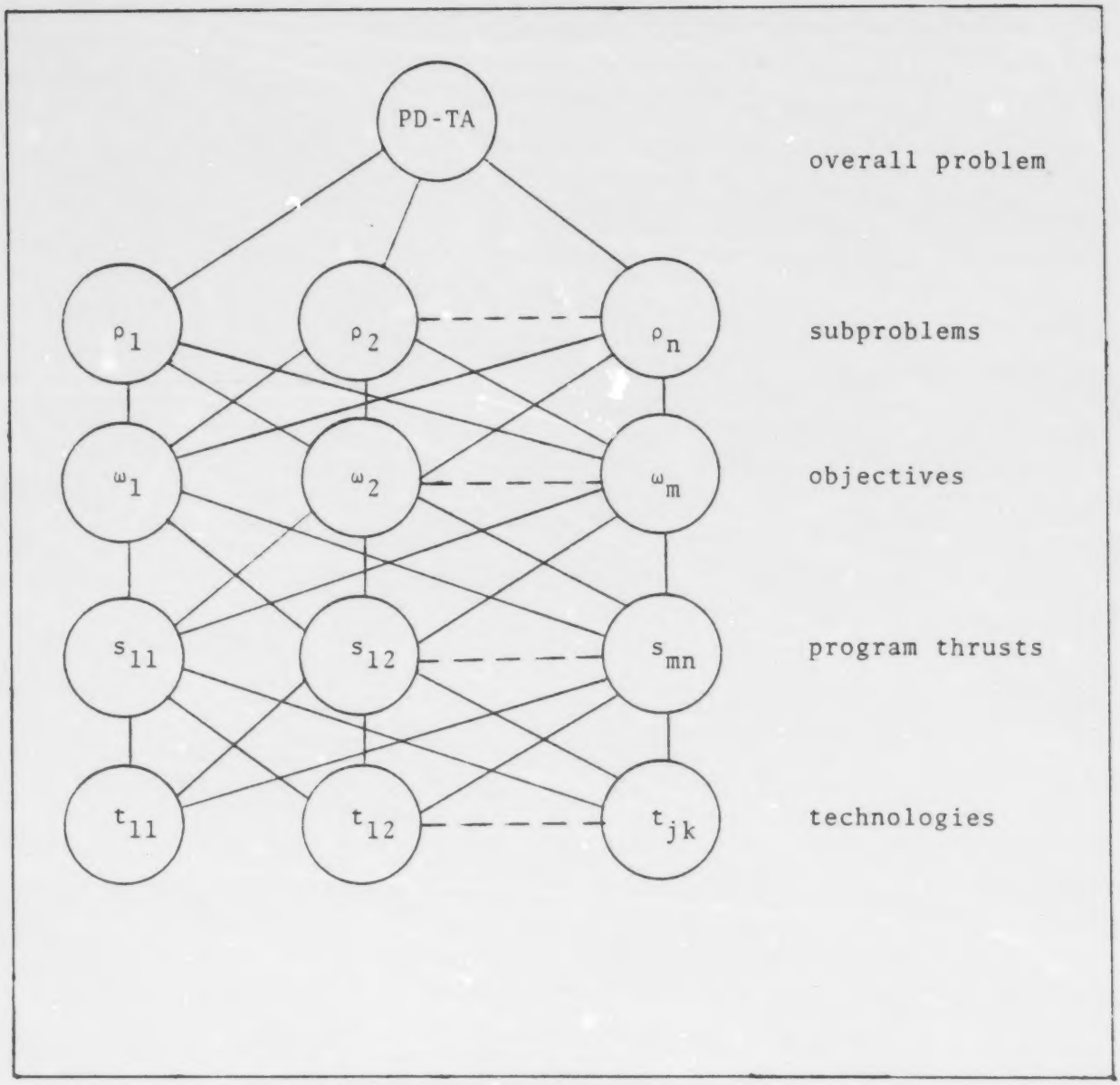


Figure 8-6. A feasible structure for relating technologies to the overall problem of a problem-driven TA

Using these ten suggested steps, it would be possible to systematically perform a technology assessment, minimizing the organizational and conceptualizational requirements necessary to efficiently accomplish the task. The basic philosophy underlying what was suggested here is the "top-down approach" that disaggregates the overall problem into smaller and smaller "chunks" until each chunk can be isolated and analyzed. Then using a "bottom-up approach," each analyzed chunk is fitted together in a synthesis involving considerations of harmony, consistency, and coordination. Thus, the policies represent coordinated collections of synthesized strategies whose implementation consequences have been analyzed.

Conclusion

In any technology assessment activity, the fundamental processes in which the model-makers must engage are the processes of data gathering, and model-building in which the data is compressed, structured, manipulated, reduced, disaggregated, and extrapolated so as to enable useful conclusions to be drawn. The mechanisms by which these processes are accomplished are currently unrigorous and unsystematic. In this paper, the use of set and graph theory, embedding theory, causality, and structural and behavioral modeling was suggested as a vehicle for overcoming the present inadequacies of current technology assessment methodology. Presently, technology assessment has no methodology of its own; it must therefore borrow from other currently available methodologies until these methodologies can be usefully extended and merged into a general methodology which is exclusively germane to technology assessment.

Appendix A

Catalog of Scenario, Consequence, and Affected Parties Variables

Included in this appendix are catalogs for each of the scenario, consequence, and affected party quantities. Each of these checklists are provided to stimulate the thinking of the workshop session participants as they perform the program thrust consequence analyses.

Catalog of Scenario Variables

Total population
Total disabled population
Total able-bodied population
Net national product
Capability
Willingness
Taxable income
Taxes
Government expenditures
Government expenditures for social concerns
Government expenditures for security concerns
Government expenditures for rehabilitation
Other government expenditures
Private expenditures for rehabilitation
Inflation
Employment/unemployment
Productivity
Number of unfilled jobs (jobs available)
Total number of jobs
Total number of persons employed
Capital available for investment
Tax rate
Cost of living
Cost of manpower
Cost of energy
Cost of services
Standard of living

Catalog of Potential Consequence Variables

Tax base

Rehabilitation jobs

Special ed	physicians	administrators	rehabilitators
nurses	counselors	researchers	

Union attitude (unrest)

Non-rehab jobs (number of)

- Education
- Counseling
- medicine

Funds for rehabilitation

- Rehab funds for training/counseling
- Rehab funds for environmental change
- Rehab funds for physical intervention
- Rehab funds for supplemental income

Employability

No. of DA institutionalized

No. of DA living independently

Supportive services

Public transportation

Visibility

No. of DA in workforce

No. of DA employed in homes and sheltered residences

No. of DA who are students (full-time)

No. of DA who are assimilated into community

No. of DA with high school education or equivalent

No. of DA with college education or equivalent

Catalog of Affected Parties

DA Population

All with mobility problems
All with health problems
All with communication problems
All with cognitive/intellectual problems
All with social/attitudinal problems
All who are severely disabled
All who are moderately disabled
Disabled children
Disabled adults
Disabled senior citizens

Population in General

service industry employees
transportation industry employees

Technological Community

- Computer industry
- Telecommunications industry
- Rehabilitation technologists
- Educational technologies
  - curriculum plans
  - computer aided ed. tools
- Transportation technologies
- Architectural technologies

Organizations

- Medical profession (AMA, etc.)
- Legal profession
- Education profession
  - PTA's
  - School boards
  - Teachers association
- Labor unions

Family

- Families with disabled
- Nondisabled families brought into involvement with disabled
- Marriage formations
- Marriage dissolutions

Appendix B

Description and Comparison of Methodologies for Quick Fabrication of Behavioral Models

This appendix discusses the currently available tools for quick synthesis of simulation models, including KSIM [12], GSIM [13], QSIM [14], XIMP [15], and system dynamics [3]. Excepting system dynamics, each of these tools are implemented as interactive, time-sharing software packages.

Kane's KSIM. The essence of simplicity is the technique invented by Kane in which a cross-impact matrix A is specified to accord with a structural model previously determined. For every coupling that appears in the structural model an entry is entered into the cross-impact matrix representing the strength and sign of the proportionality between the two adjacent quantities. For example, if a strong negative interaction was directed from quantity q_j toward quantity q_k a minus 3 might be entered in the kj^{th} position of the cross-impact matrix. (See discussion presented in the next appendix for an example of a cross-impact matrix and its associated structural model). Then a specific formula is employed to interrelate the various quantities involved--that formula is

$$\dot{q}_i = - \sum_{j=1}^{n} a_{ij} q_j q_i \ln q_i, \quad i = 1,2,\ldots,n \quad , \qquad (1)$$

$$q_i(t_o) = q_{io}, \text{ where } \{a_{ij}\} = A,$$

$$\text{and } 0 \leq q_i(t) \leq 1.$$

The differential equation model is linear when the modulation function $q_i \ln q_i$ is removed, and has the form

$$\dot{q} = -A \cdot q, \; q(to) = q_o$$

where q is an n-vector defined on an n-dimensional Euclidean space E^n. The modulation function causes the derivative of any q_i to go to zero as the limits 0 or 1 are approached by q_i. Thus, each quantity must be scaled to the interval 0 to 1.

A first-order difference equation approximation to (1) is given by

$$q_i(t + \Delta t) = q_i(t)^{p_i(t)} \tag{2}$$

where

$$p_i(t) = \frac{1 + \frac{\Delta t}{2} \sum_{j=1}^{n} (|a_{ij}| - q_{ij}) \, q_j}{1 + \frac{\Delta t}{2} \sum_{j=1}^{n} (|a_{ij}| + q_{ij}) \, q_j}, \tag{3}$$

or stated another way

$$p_i(t) = \frac{1 + \Delta t \; |\text{sum of negative impacts on } x_i|}{1 + \Delta t \; |\text{sum of positive impacts on } x_i|}$$

When the negative impacts are greater than the positive impacts, $p_i(t) > 1$ and q_i decreases; otherwise q_i increases or remains the same. Eqs. (2-3) represent the algorithm actually used for computer implementation of the technique.

The beauty of this beast is its simplicity; on the other hand, the shortcomings of the approach also stem from its simplicity and are many: a strict quasi-linear model which is capable of exhibiting sigmoid behavior only, no

consideration of delayed impacts, and no opportunity for change in the impact coefficients a_{ij} over time are a few such inadequacies. To overcome these and other deficiencies, GSIM [13] was developed.

Marcy's GSIM. GSIM (for Geometric SIMulation) resembles KSIM in the sense that Algorithm (2) is used to numerically integrate Eq. (1). Here is where the similarities end. The notion of a delayed impact has been incorporated through the use of "operational cross-impact matrices". Likewise, the technique offers facilities for changing cross-impact coefficients when thresholds are crossed. This capability can actually cause the overdamped sigmoid model to exhibit oscillatory behavior even when the amplitude of oscillation approaches one of the 0 or 1 boundaries. Such behavior is simply not possible with constant coefficients in the standard sigmoid model. 'Thresholds' are common occurrences in social systems.

Moll's XIMP. Mr. Moll has a very interesting variation of KSIM that is worthy of note. Moll took the basic KSIM package and included within it several systems analysis facilities, including parameter identification, tracking optimization, sensitivity analysis, and stability analysis. In addition, Mr. Moll modified Eq. (3) above through inclusion of base values for each quantity, denoted q_k^b. In XIMP, $p_i(t)$ is given by

$$p_i(t) = \frac{1 + \frac{\Delta t}{2} \sum_{j=1}^{n} \{|a_{ij}(q_j - q_j^b)| - a_{ij}(q_j - q_j^b)\}}{1 + \frac{\Delta t}{2} \sum_{j=1}^{n} \{|a_{ij}(q_j - q_j^b)| + a_{ij}(q_j - q_j^b)\}} \quad (4)$$

The inclusion of base values q_k^b in Eq. (4) has certain conceptual advantages over the KSIM model. The modeler must now be concerned with the difference between the quantity and its base value as a basis for impacts upon the other quantities included in the model. Often it turns out that the magnitude of a quantity is not the sole consideration in determining how that quantity affects other quantities. For example, houses are constructed in relation to a desired number of homes required taken in contrast with the actual homes required, where the desired number of homes can be thought of as the base value. Pollution standards are set to adjust current pollution levels toward desired inventories, etc.

The optimization algorithms included with the XIMP interactive package are also veritably useful. The tracking problem in which parameters are adjusted to fit predicted traces with historical traces is simply a special case of the parameter optimization problem in which the objective is to minimize the integral square error between predicted versus historical trajectories. The package uses the Marquardt Method [19] to perform the parameter adjustments. In the

parameter optimization problem, the goals of the system are formulated into an objective functional and the Marquardt algorithm adjusts parameter settings to extremize the objective functional. The parameter settings, once extremized, constitute an optimal policy for achieving the goals of the system as represented by the objective functional.

The sensitivity algorithms facilitate an understanding of the dynamical behavior exhibited by the model through indicating the degree of sensitivity which any quantity q_i has in relation to its impact coefficients q_{ij}, i=1,...,n. If a particular q_i has a high degree of sensitivity to an a_{ij}, then that a_{ij} should be chosen with extreme care. On the other hand, if q_i is relatively unsensitive to the setting associated with a particular a_{ij}, then a group of panelists should not waste time debating the appropriateness of any particular setting for that a_{ij}.

Wakeland's QSIM2. Like KSIM, GSIM, and XIMP, QSIM2 is a tool which enables quick and expeditious transformation of causal models into simulation models. In the author's own words, "the primary motivation for developing QSIM2 is an attempt to fill a perceived gap between J. Kane's KSIM which has the very appealing properties of being quick and user-intensive, and J. Forrester's more comprehensive system dynamics". In QSIM2, some of the variables in the quantity set Q are identified as "auxiliary" variables. Auxiliary variables are assigned explicit analytic functions of other auxiliary variables and states. The rows associated

with auxiliary variables are removed from the cross-impact matrix, even though the associated columns remain.

Forrester's System Dynamics. System dynamics differs substantially from the previous four techniques just discussed in that it has a batch orientation in terms of machine execution and, it makes no use of cross-impact matrices. The modeler synthesizes each model by hand and the resultant difference equations do not conform to a 'standard form' which has been preprogrammed. Neither are the variables required to be scaled in the interval from 0 to 1. The variables themselves must be classified as either parameters, levels (states), auxiliaries, rates, or outputs, and are interrelated by means of couplings. The couplings are themselves of two types--either flow or information. The structure of a system dynamics model consists of these basic building blocks which are pieced together by means of specific rules [4]. Conventionally, Forrester-style system dynamics models are time-consuming to fabricate and therefore cannot be conveniently used in a work-shop context for quick extrapolation of the structural consequences of any causal model.

Wakeland [14] compares KSIM and system dynamics with his QSIM2, using the following criteria:

1) mathematic model equation form used
2) graphical and pictorial aids used
3) style and features of the available computer implementations.

He concludes that system dynamics is the most general with regard to the first criterion above, but "the price paid for this high capability is its attendant complexity". However, KSIM is easiest to use, he maintains, and experience with KSIM has shown that most modeling efforts exhaust its capabilities after the second or third revision. System dynamics and QSIM are able to incorporate more detailed conceptions. QSIM and KSIM can be prepared in roughtly the same amount of time whereas system dynamics, in view of its batch orientation, requires considerably more time.

Appendix C

An example Structural Model and Associated Cross-Consequence Matrix and Behavioral Plot

An example of a cross-impact matrix, its corresponding structural model, and behavioral plot is described. Consider a rehabilitation model consisting of the variables shown in Table 8-4 below.

TABLE 8-4

A SET OF SIGNIFICANT QUANTITIES Q FOR THE PROBLEM CONSIDERED

	Variable	Corresp. Symbol
(S) Scenario variables	Societal capability	A
	Tax willingness	B
	Funds to societal needs	C
	Disabled population	D
	No. of jobs available	E
(P) Program thrust variable	Work-related transportation of goods and services	G
(C) Consequence variables	Disabled employable	H
	No. in workforce	I
	Disabled employment	J
	Home employment	M
	Total unemployment	N
	Productivity	O
	Attitude	P
	Needed rehab funds	Q
(A) Affected party variable	Union activism	R

The purpose of this model is to study the consequences of transporting goods and services to the disabled so as to enable them to be employed at home or in institutions. As shown, the variables are grouped as scenario variables S,

program thrust variable P, consequence variables C, and affected party variable A, thus defining a partition upon the set of relevant quantities Q as previously specified in the body of this paper. These variables are interrelated by means of the structural model or causal diagram shown in figure 8-7. From figure 8-7, the inputs to the rehab subsystem are disabled population, societal capability, and number of jobs available, whereas the outputs from the model are number in workforce, productivity, attitude, and needed rehab funds.

From the delineated structure, the number in workforce and productivity will be simple monotonically increasing functions of time because all couplings leading from the inputs to the outputs are positive. This statement is unequivocally true when the inputs upon which the outputs are dependent do not diminish in algebraic value as time advances. From the structural model, it is also clear that attitude must increase, whereas needed rehab funds must diminish. This is because the number of couplings with minus signs is even for attitude when those couplings which make attitude reachable from its input(s) are considered. Likewise, the couplings which connect needed rehab funds with its associated input have a total minus sign count which is negative. Therefore, needed rehab funds will diminish, presuming its input does not itself diminish with time. These behavioral implications are rather lucidly perceived when the structural

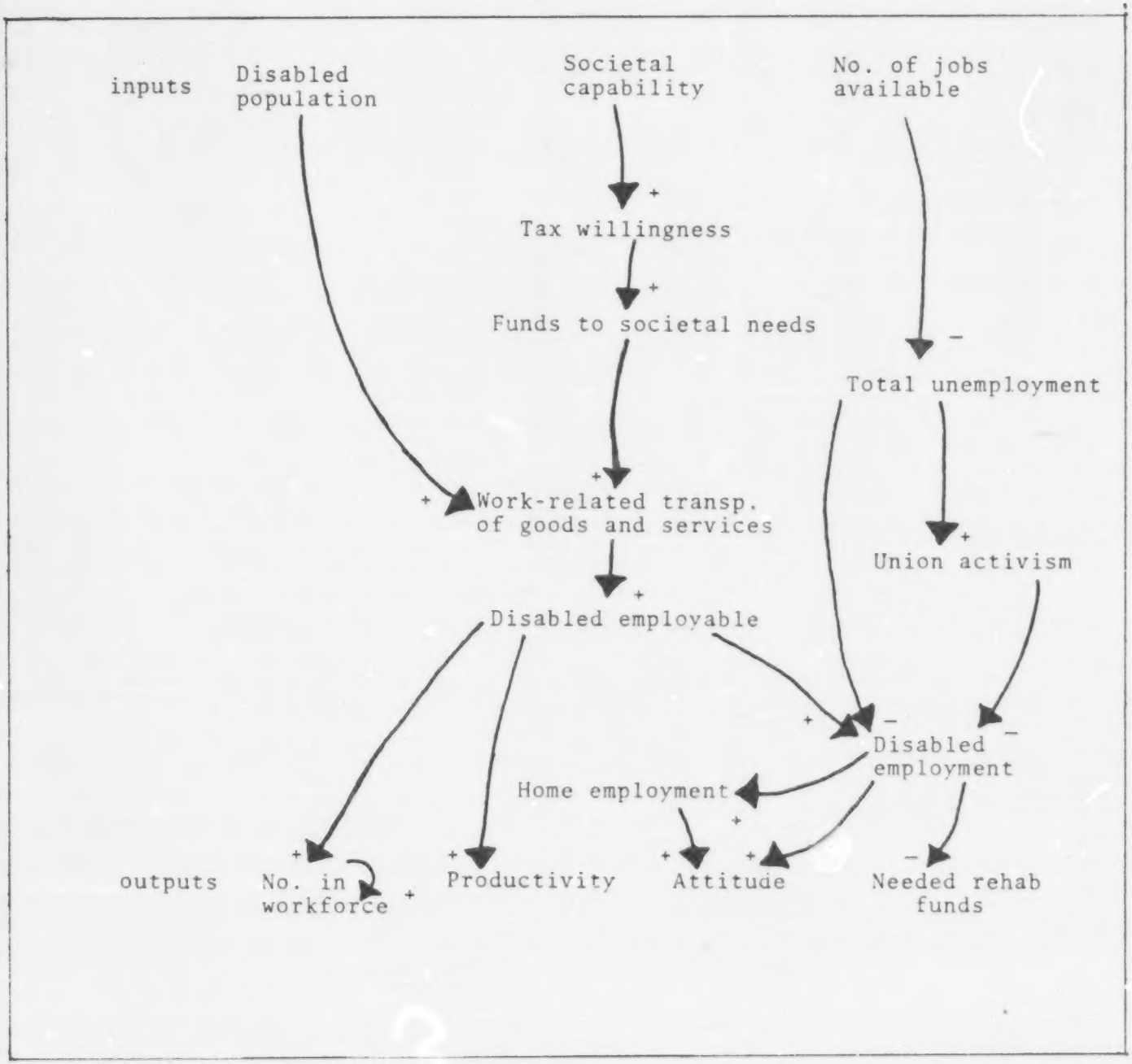


Figure 8-7. A typical structural model for consequence analysis

model is drawn with its inputs and outputs clearly depicted. (Moreover, the described consequences are borne-out by the simulation runs.) As a final comment, it is worth noting that there is no feedback in this model, excepting the "loop" on number in workforce.

Our work with this model has suggested that it might be possible to use the cross-impact or cross-consequence matrix to specify the interactions among the various quantities involved. This seems especially promising since computer inputs to GSIM must be in the form of a cross-consequence matrix and Kane [12] notes that there is a great benefit from considering all possible pairing of quantities which the cross-consequence matrix forces the user to do.

At the same time it was observed that if the quantities Q were partitioned into scenario variables S, program thrust variables P, consequence variables C, and affected party variables A, that portions of the cross-consequence matrix could be inferred since it is impossible for some quantity types to affect other quantity types. For example, it is impossible for affected party variables A and consequence variables C to affect program thrust variables P. In the cross-consequence matrix the entries along the row associated with a quantity represent the affect (if any) which the other quantities have upon the quantity.

The cross-consequence matrix for any model whose partition upon Q is given by Π_Q = {S;P;C;A} is shown in figure 8-8. It is apparent that much of the cross-consequence matrix can be inferred. One would not expect that program thrust variables P,

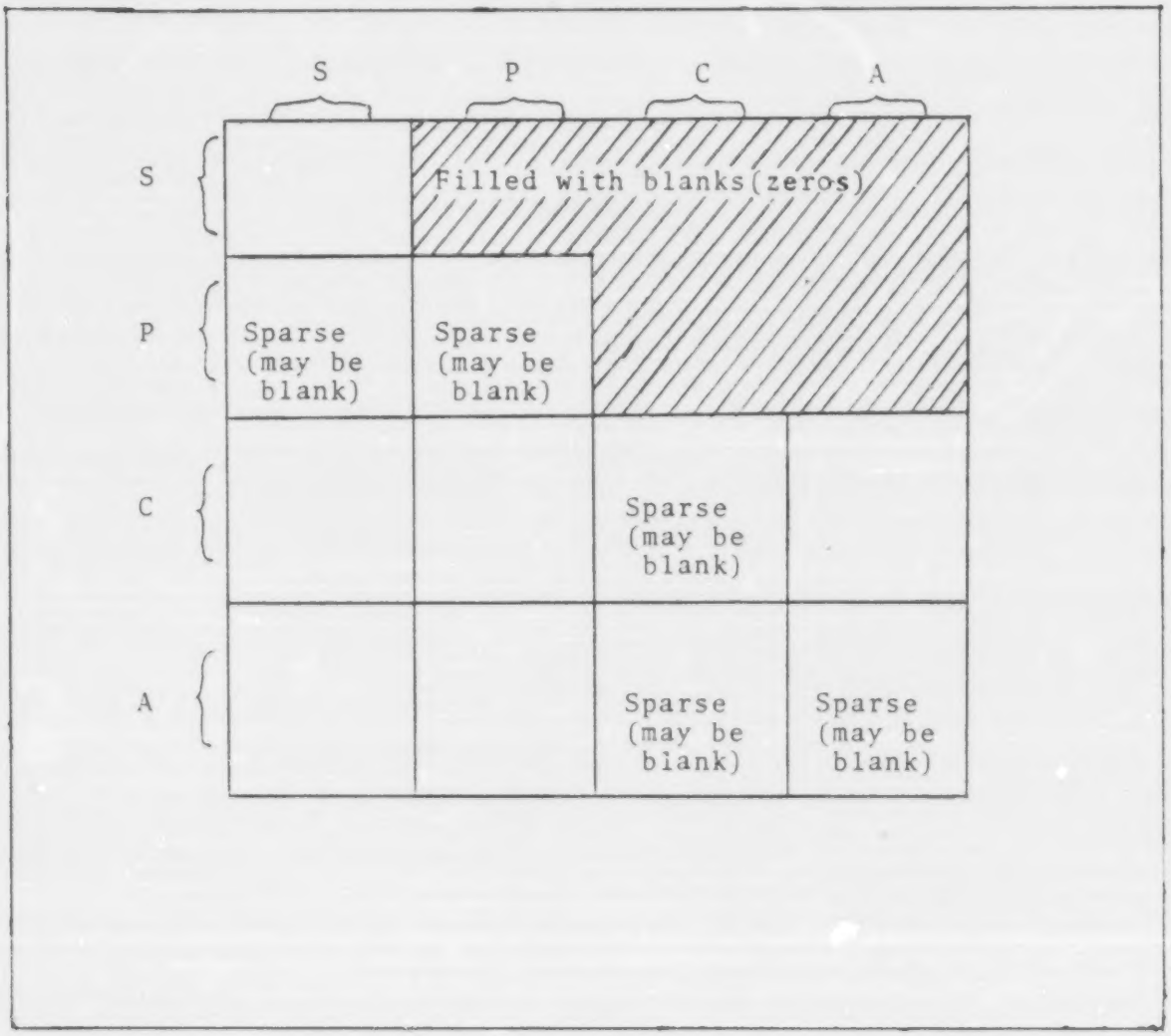


Figure 8-8. Cross-consequence matrix partitioned upon the set Q by Π_Q = {S;P;C;A}

consequence variables C, or affected party variables A would have any affect on scenario variables S. Therefore, these portions of the matrix above are filled with blanks (zeros).

The following cross-consequence matrix has been defined for the example problem being examined, and is that shown in figure 8-9.

	A	B	C	D	E	G	H	I	J	M	N	O	P	Q	R
A															
B	.1														
C		.1													
D															
E															
G			.15	.05											
H						.6									
I							.05								
J							.4				−.3				−.05
M									.2						
N					−.02										
O							.05								
P									.3	.15					
Q									−.3						
R												.4			

Figure 8-9. Cross-consequence matrix for the example problem being considered (blanks are zero)

Behavioral results for this model are provided in plots shown in figures 8-10 and 8-11.

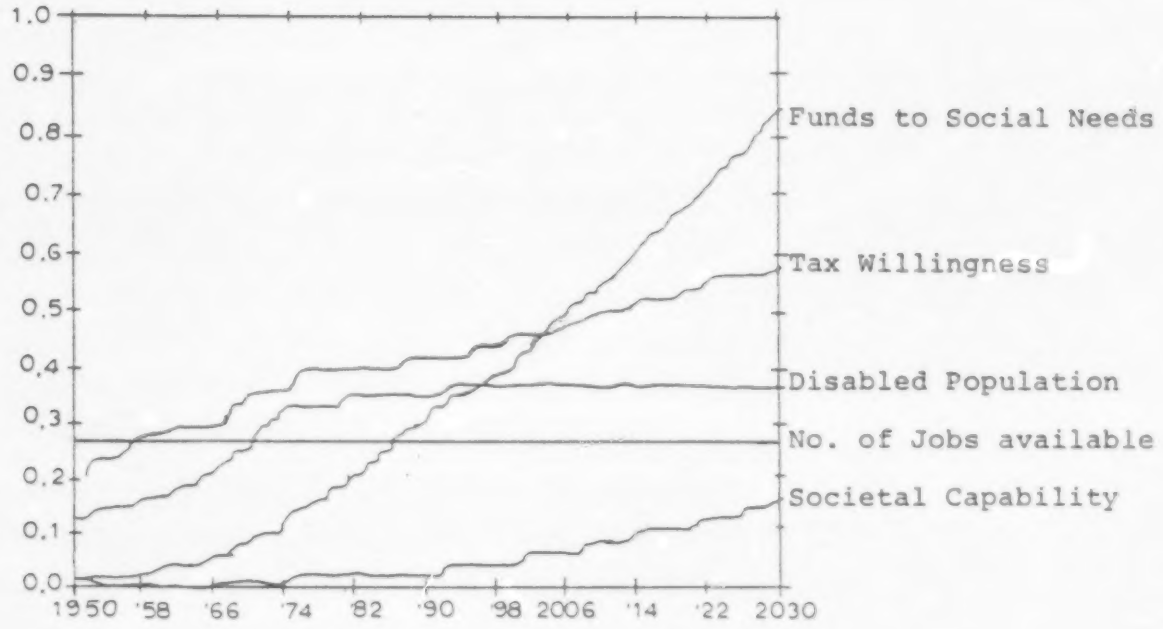


Figure 8-10. Plot of scenario variables

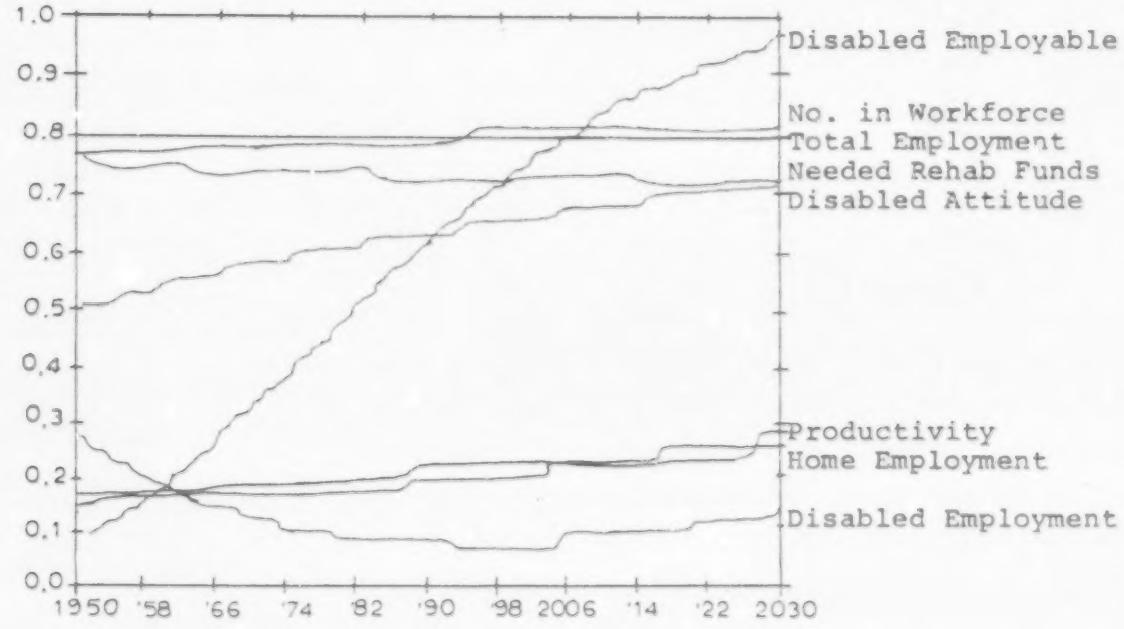


Figure 8-11. Plot of consequence variables for the transportation of work-related goods and services program thrust.

Appendix D

Scenario Table

This appendix provides, in tabular form, a description of the three basic scenarios discussed in the body of this paper. In each scenario there are four basic variables, and several other minor variables. These variables are listed below.

TABLE 8-5

LIST OF BASIC AND ADDITIONAL SCENARIO VARIABLES

Basic	Capability
	Net National Product
	Total Population
	Willingness
	Total Government Spending (Tax Rate)
	Net National Product
	Funding for Social Programs
	Disabled Population
Additional	Funding for Rehab
	Total Population
	Productivity
	Inflation
	Standard of living
	Unemployment

The structure or causal diagram corresponding to this scenario model is shown in figure 8-4. Plots of the simulated results are available for each scenario but are unattached.

The variables in Figure 8-12 were taken from the scenario descriptions provided in the "social contexts" paper.

variable scenario	I MGFS	II AGFS	III RGFS
Funding for rehab	moderate growth	accelerated growth	reduced
Disabled population	moderate growth (same % of total pop.) until the year 2000, stabilizes thereafter	moderate growth (same % of total pop.) until the year 2000, diminishes at 7% per annum thereafter	moderate growth (same % of total pop.) through the year 2025
NNP	3.35% growth	4.5% growth	1.33 % growth
Total population	.685% growth	.630% to 1985 .365%, 1985-2020 .236%, 2020-2025	1.125% growth
Capability	moderate growth	increases with economy	reduced growth
Willingness	moderate growth	increases with economy	reduced growth
Tax rate	increases	very moderate increase	accelerated increase
Inflation	increases	moderate increase	increases
Standard of living	moderate	general prosperity	lowered
Unemployment	6-7% maintained	4-5% maintained	9-11% maintained
Productivity	moderately increasing	increasing	reduced after 1985

Figure 8-12. Variables which summarize the scenarios.

Note: Material in this appendix was developed for possible review and consideration by the workshop session participants and does not therefore necessarily represent the structure of any actually developed dynamic models of cost/benefit analysis.

Appendix E

Statistical and Simulation Models for Cost/Benefit Analysis

Benefit/cost analyses have previously been performed in connection with studies of human rehabilitation [20]. Such analyses utilized extensive data and statistical models to extrapolate the trends indicated by the data. These models suffer from inadequacies regarding measures of benefit which are defined in terms of "wages at opening," and "wages at closure." The specificity of these terms makes their proper determination difficult.

In this section an alternative to the data-dependent statistical approach discussed in [20] is suggested. The approach [3,4] employs structural or causal modeling to arrive at a simulation model which exhibits the behavioral implications of the structure.

The approach consists of the following steps. These steps will be expedited by causal data gathered in the July workshop sessions.

Step 1 -- Determination of the Significant Subsystems and Quantities
Step 2 -- Determination of the Interactions
Step 3 -- Development of the Mathematical Model
Step 4 -- Determination of the Settings of Parameters and Initial Conditions
Step 5 -- Determination of Performance Measures
Step 6 -- Computerization of the Model
Step 7 -- Verification of the Simulation

Step 8 -- Validation of the Simulation
Step 9 -- Design and Conduct of Policy Experiments
Step 10 - Report Preparation

The notation employed is defined next, and this is followed by a structural model. Let there be I disabled population categories, J technologies , K life functions; then each of these entities are interrelated by means of the variables and constants defined in Table 8-6.

TABLE 8-6

LIST OF VARIABLES AND PARAMETERS FOR COST/BENEFIT REHABILITATION SUBMODEL

Name	Description	Variable	Parameter
P_{ij}	Percentage of pop. cat. i requiring tech. type j		x
PP_{ij}	Cost per capita to supply tech. cat. j to pop. cat. i		x
DP_i	Disabled population category i	x	
V_{ij}	No. of persons in pop. cat. i requiring tech. type j	x	
VV_{ij}	Total cost to maintain tech. type j for pop. cat. i for a year	x	
R_{ij}	No. of persons in pop. cat. i receiving tech. type j	x	
LL_{ik}	Measure of life function k for pop. cat. i	x	
LLSUM	Overall sum of life function measures	x	
VVSUM	Total cost to maintain existing programs for disabled	x	
AVSUM	Total funds available		x
$AVAIL_j$	Total funds allocated to tech. type j	x	
LP_{ik}	Percentage of pop. cat. i that has "normal" life function attribute k	x	
RR_{ij}	Ratio of No. of persons in pop. cat. i receiving tech. type j to those (in i) requiring tech. type j	x	
$LSUM_k$	Life function measure for L.F. type k	x	
$SENS_{kj}$	Sensitivity of life function k to tech. type j	x	

Such "inputs" as total population and funds available for rehab would be provided by the scenario model depicted in figure 8-4.

The disabled populations modeled using quantities defined in Table 8-7 with structure specified as shown in figure 8-13. There are many disability categories; each of these will use the same generic structure which is depicted in figure 8-13. All parameters and initial values for states will be determined from data gathered by the parent study, some of which is already available.

From the structure, the equations for model can be determined. For example, the time rate of change[†] of disabled population category i can be determined from figure 8-13 to be

$$\dot{D}_i = ABDR_i + DMR_i + DBR_i - DDR_i - ABRR_i$$

The disabled incidence, birth, restoration, death, and migration rates would be defined as follows.

$$ABDR_i = GP \cdot ABDRN_i \cdot \text{multipliers}$$

$$DMR_i = DMRN_i \cdot \text{multipliers}$$

$$ABRR_i = GP \cdot ABRRN_i \cdot \text{multipliers}$$

$$DBR_i = GP \cdot DBRNFD_i \cdot \text{multipliers} + D_i \cdot DBRNFD_i \cdot \text{multipliers}$$

$$DDR_i = DDRN_i \cdot D_i \cdot \text{multipliers}$$

The multipliers indicated above are variables which are functions of still other variables that potentially have the capability to change the associated rate.

[†]The time rate of change of disable population is denoted $\dot{D}_i$.

TABLE 8-7

DEFINITION OF QUANTITIES SHOWN IN FIGURE 8-13

Abbreviation	Name	Units	Identity
GP	General Population	capita	state
D_i	Disabled Population, category;	capita	state
$ABDRN_i$	After-Birth Disabling Rate Normal	1/time	parameter
$ABDR_i$	After-Birth Disabling Rate	capita/time	rate
DMR_i	Disabled Migration Rate	capita/time	rate
DBR_i	Disabled Birth Rate	capita/time	rate
$DBRNFP_i$	Disabled Birth Rate Normal from GP	1/time	rate
DDR_i	Disabled Death Rate	capita/time	rate
$DDRN_i$	Disabled Death Rate Normal	1/time	parameter
$ABRR_i$	After-Birth Restoration Rate	capita/time	rate
$ABRRN_i$	After-Birth Restoration Rate Normal	1/time	parameter
$DBRNFD_i$	Disabled Birth Rate Normal from $Disabled_i$	1/time	parameter

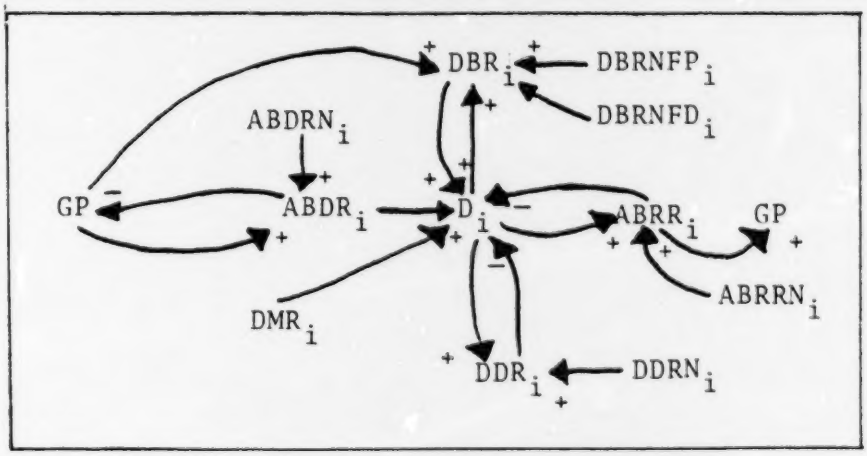
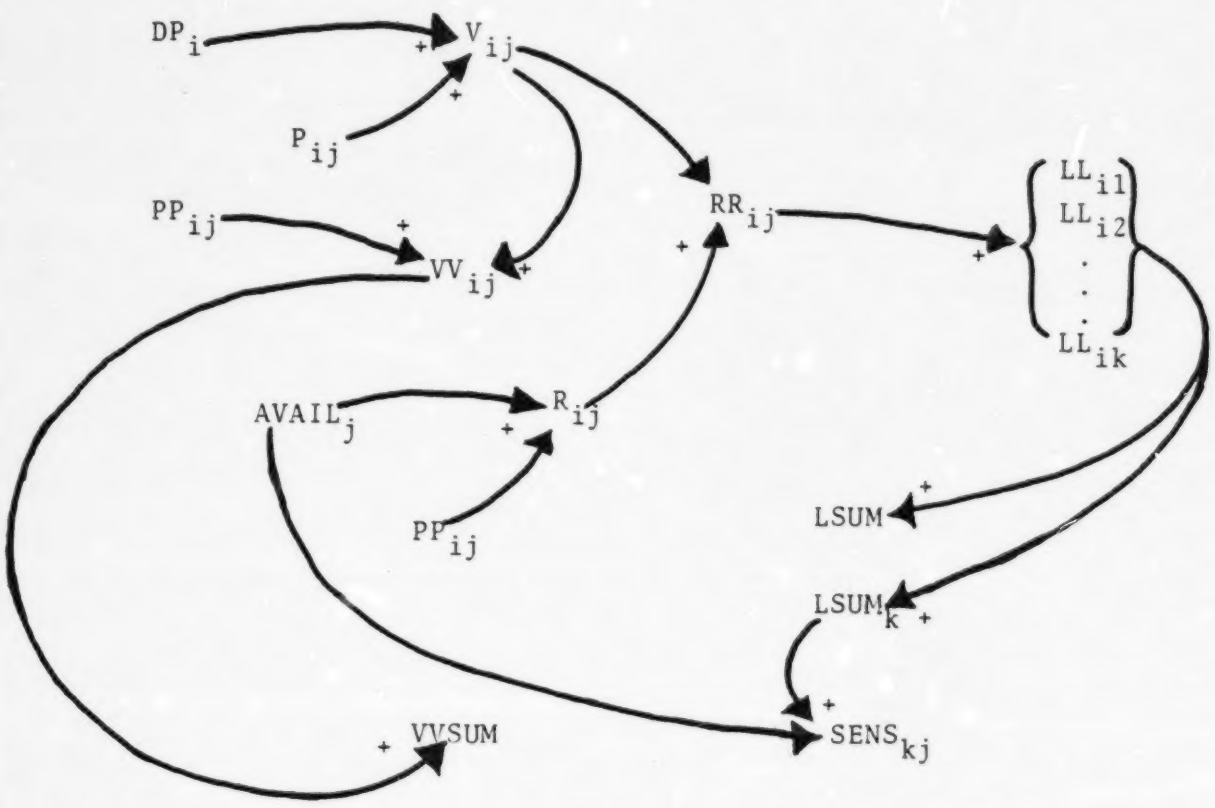


Figure 8-14. Causal model for a typical disabled population $category_i$

These quantities are interrelated by means of the following structure shown in figure 8-14.



Equations:

$$V_{ij} = DP_i \cdot P_{ij}$$

$$VV_{ij} = V_{ij} \cdot PP_{ij}$$

$$R_{ij} = AVAIL_j / PP_{ij}$$

$$RR_{ij} = R_{ij} / V_{ij}$$

$$LL_{ik} = f(RR_{ij})$$

$$LSUM_k = \sum_{i=1}^{I} LL_{ik}$$

$$LLSUM = \sum_{k=1}^{k} LSUM_k$$

$$VVSUM = \sum_{i=1}^{I} \sum_{j=1}^{J} VV_{ij}$$

$$SENS_{kj} = \frac{\Delta LSUM_k}{LSUM^k} / \frac{\Delta AVAIL_j}{AVAIL^j}$$

Figure 8-14. Dynamic cost benefit model for rehabilitation subsystem (this same generic structure would be used for each of the I*J combinations of technologies and disability categories)

This model can be employed to assess the relative costs and benefits of various rehabilitation policies. Using sensitivity analyses costs can be ratioed to benefits and these ratios will be compared under various scenario and policy combinations. The comparisons should lead to insightful understanding regarding those policies which are superior in overall performance.

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